Stone Age Painting in India

Robert R. R. Brooks
Vishnu S. Wakankar

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Stone Age Painting in India

Robert R. R. Brooks and Vishnu S. Wakankar

Foreword by Chester Bowles

In the sandstone caves of central India are found a greater number and variety of Stone Age paintings than in any other region of the world. The oldest of these paintings probably date from the Upper Paleolithic period, over ten thousand years ago, and cave paintings continued to be made until the recent past. In addition to being valuable archeological evidence, reflecting changes in the culture and conditions of the artists' tribes, most of these paintings show an economy of line, a sense of graceful motion, and elegantly accurate observation that make them significant works of art in their own right.

But Indian Stone Age art has remained largely unexplored; even its existence is not widely known. Here, for the first time in Western literature, is a book-length discussion of the subject. The text deals with the basic questions of who painted the pictures, why they painted, and the relationships between the paintings and other artistic traditions. Six appendixes provide more technical information for specialists in archeology, art history, and the history of India.

The book is profusely illustrated, with thirty pages in full color and duotones throughout. Although the paintings in the caves are often very faint, and many layers of other paintings are often superimposed upon them, Brooks has developed a technique for recreating in photographs the original clarity of the images. The colorplates thus show strikingly brilliant paintings against the richly textured background of the rock walls.

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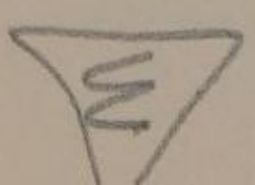
Front jacket illustration

Hunting dance
Style 5
Bhimbetka
Late Mesolithic
About 20 in.
Restored
A wizard with inverted arrow tips appears at the right.



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To Mary and Laxmi

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Foreword

The publication of the unique and beautiful color photographs in this book was made possible by the Mary Storer Brooks Memorial Fund.

When I returned to India in 1963 as United States ambassador, with Bob Brooks as cultural attaché, his wife Mary and he began a series of travels throughout southern and southeastern Asia. In the course of ten years they went everywhere, from Afghanistan, Pakistan, Swat, Kashmir, Ladakh, Nepal, Sikkim, Bhutan, and Assam, in the north, to the tip of Cape Cormorin, in the south. They supplemented this with vacation journeys in Southeast Asia which took them from Ayodhya in Thailand and Angkor Vat in Cambodia throughout the South Sea Islands to the last outpost of Indonesia on the island of Timor.

Mary Storer Brooks at the U.S. Embassy in New Delhi

Most of this travel was occasioned by their official duties in their roles as supervisor and hostess for the many cultural activities of Americans in India. The rest, undertaken on their own time and funds, was inspired by their intense joint interests in people, places, ornithology, and archeology.

In the course of one of these journeys, in 1963, they met Vishnu S. Wakankar of Vikram University, who has since become one of India's outstanding archeologists and a recipient of the presidential decoration, Padma Shri, in 1975. He told them about the immense, but almost unknown treasure of Stone Age paintings in central India. During the following years they helped him pursue his studies in discovering, analyzing, and classifying these rock-shelter paintings. Particularly, they undertook to photograph, for the first time in color, the principal Stone Age painting sites.

To supplement their reading about Stone Age painting in other parts of the world, they made a journey in 1971 in company with Bob's sister Helen Coombs, in the course of which they photographed the principal Stone Age painting sites of southern France, northern and eastern Spain, and North Africa. Their visit to the Sahara involved a 1,000 mile flight to an oasis, and a six-day, forty-five-mile climb through the Tassili mountains of southeastern Algeria.

In 1973, Mary and Bob continued their joint effort by photographing the principal pre-Columbian rock engravings and paintings of Texas, New Mexico, and Arizona.

Tragically, Mary did not live to see, in the form of this book, the consummation of this extraordinary Indo-American collaboration. No one who knew Mary Brooks is likely to forget her beauty as a person, her skill as a hostess, her thoughtfulness as a friend, her devotion to her extended family, and the unflinching courage with which she lived through her final year. Her family and friends extract some consolation for her untimely death from the opportunity to contribute toward the publication of this book, in which she had so great an interest.

Chester Bowles

Essex, Connecticut
October 1, 1975

Preface

During the century since the discovery of magnificently painted bison in the caverns of Altamira, on the north coast of Spain, Stone Age paintings have been found on every continent except Antarctica. The disbelief that greeted the Alcalde del Rio's opinion that the Altamira paintings were of great antiquity has given way to casual acceptance of the fact that even Neanderthal man was capable of the fine arts as early as 30,000 B.C.E. and that Magdalenian man by the year 10,000 B.C.E. had brought them to a level rarely since surpassed. There is probably some sentimentality in this more recent judgement, but it suggests how far the pendulum has swung. Scientists, scholars, and even undergraduates have devoted their talents to appraising the Stone Age engraving, carving, modeling, and painting of almost every country in Europe; northern and eastern Asia; North, Central, and South America; East, South, and Saharan Africa; and Australia. Literature on the subject now runs to hundreds of books, articles, monographs, and archeological notes.

In all of this scholarly and popular writing, however, the subject of rock painting in India has been badly neglected. Nothing substantial has been written recognizing that the sandstone country of central India is a natural museum of Stone Age paintings greater in number and variety than those of any other region of the world except, possibly, the Tassili mountains of southeastern Algeria.

A few of the village people of central India have probably known for centuries of the existence of rock paintings in the shelters near their huts. They cannot easily have missed some of them, since the villagers often take refuge from rain or sun in the shelters with paintings while herding sheep or goats in the scrub growth or coarse weeds nearby. But the first reports by outsiders who recognized that the paintings were not contemporary and might indeed be very old occurred in the 1880s. The reports came from British officials who had some training and great interest in the new field of archeology.

From the turn of the century until the 1950s, there was an intermittent trickle of monographs in obscure journals, first by British officials and later by Indian scholars, reporting local investigations. This effort was expanded in the 1940s and 1950s by M. E. and D. A. Gordon, and in the 1950s and 60s by Bridget and Raymond Allchin. Both of these husband-and-wife teams included excellent chapters on rock-shelter paintings in their books on Indian prehistory. Even their efforts, however, were limited to a few localities and their conclusions have been neglected by Western archeologists and art historians.

Interest within India is beginning to stir, especially among the younger archeologists, but it is still not commensurate with the extraordinary richness and variety of the rock paintings available for study. To help in remedying this situation, we have collaborated in writing this book. I have worked for eleven years on the project as a writer, photographer, and amateur archeologist. Vishnu Wakankar is a professional archeologist and artist who has been immersed in this highly specialized field for twenty-two years. Both of us have had the opportunity to study the Stone Age paintings of France, Spain, North Africa, and the southwestern corner of the United States. This has helped us in making judgments about the significantly different Stone Age paintings of central India. We have been working together since 1963, when I was cultural attaché of the American embassy in New Delhi, and Wakankar was an archeologist at Vikram University and principal of the Indian School of Painting in Ujjain. I am responsible for the text, captions, photographs, and reconstructions of photographs in this book; Wakankar, for the archeological data, style charts, and drawings. In all matters of opinion we share joint responsibility, as a result of endless hours of exhausting but amiable discussion.

In organizing this book, we asked ourselves a number of simple questions and arranged our material around our attempts to answer them: Where, what, how, why, and when did the Indian Stone Age artists paint? Who were they? What happened to them? And what were the influences upon them? The answers are more complicated than the questions. But we have tried to make them of interest to the general reader while meeting the needs of archeologists by including in the appendixes material of special interest to them.

R. R. R. B.

Painted Rock-Shelter Regions in India

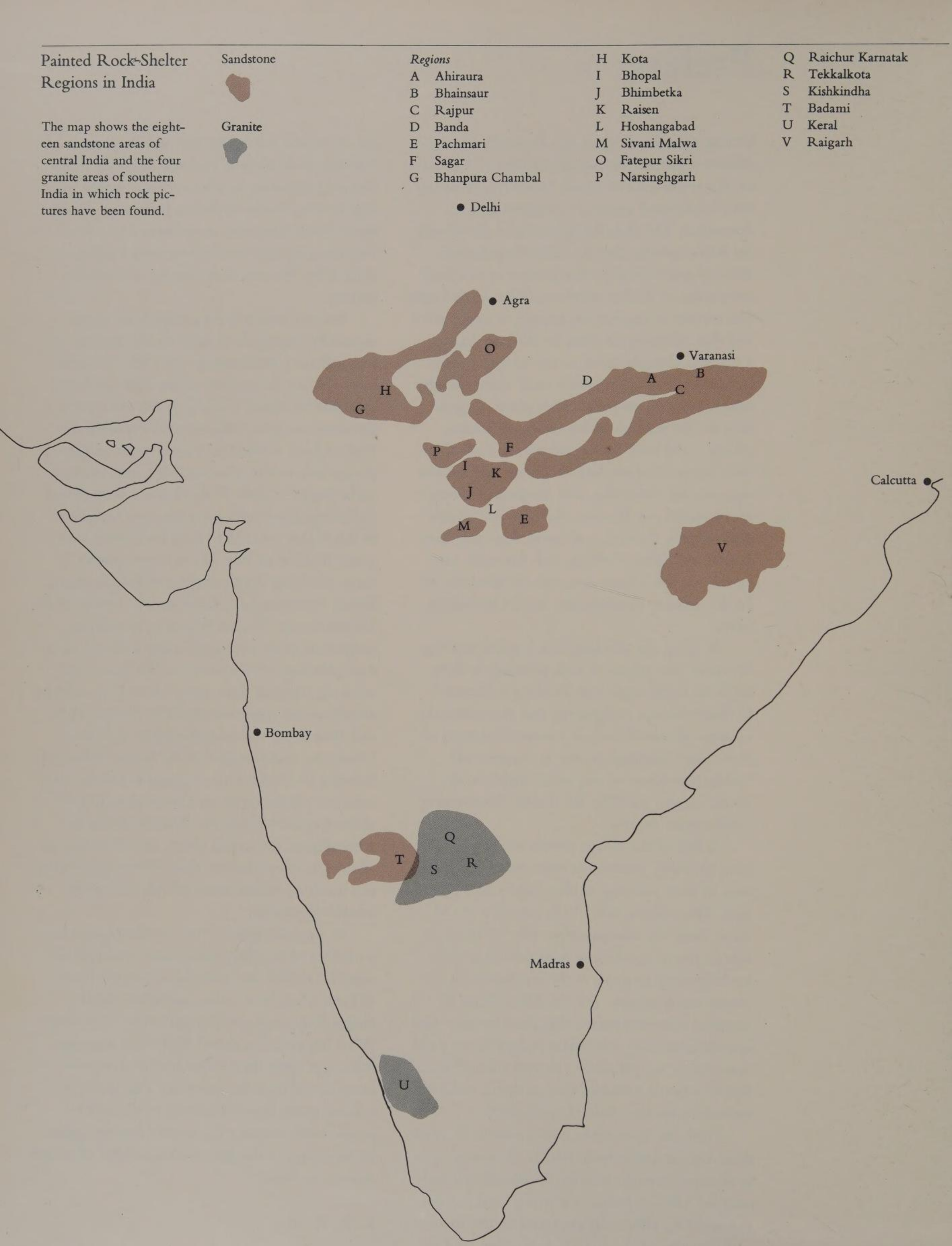
The map shows the eighteen sandstone areas of central India and the four granite areas of southern India in which rock pictures have been found.

Sandstone

Granite

Regions

A Ahiraura
B Bhainsaur
C Rajpur
D Banda
E Pachmari
F Sagar
G Bhanpura Chambal
H Kota
I Bhopal
J Bhimbetka
K Raisen
L Hoshangabad
M Sivani Malwa
O Fatepur Sikri
P Narsinghgarh
Q Raichur Karnatak
R Tekkalkota
S Kishkindha
T Badami
U Keral
V Raigarh



Introduction: Where? What? How?

In the sandstone areas of central India there are hundreds of rock shelters decorated with thousands of paintings. As shown on the map, most of the painted shelters are in a roughly triangular area with its base in the north running from the Chambal River basin at the west to Banaras (Varanasi) at the east, and its apex in the south near Mysore City. Within this area, more than a thousand painted shelters have been surveyed by trained observers in twenty-two regions. But this is probably less than half of the painted shelters that exist, since many areas known to have sandstone formations with shelters suitable for painting have not been examined by archeologists.

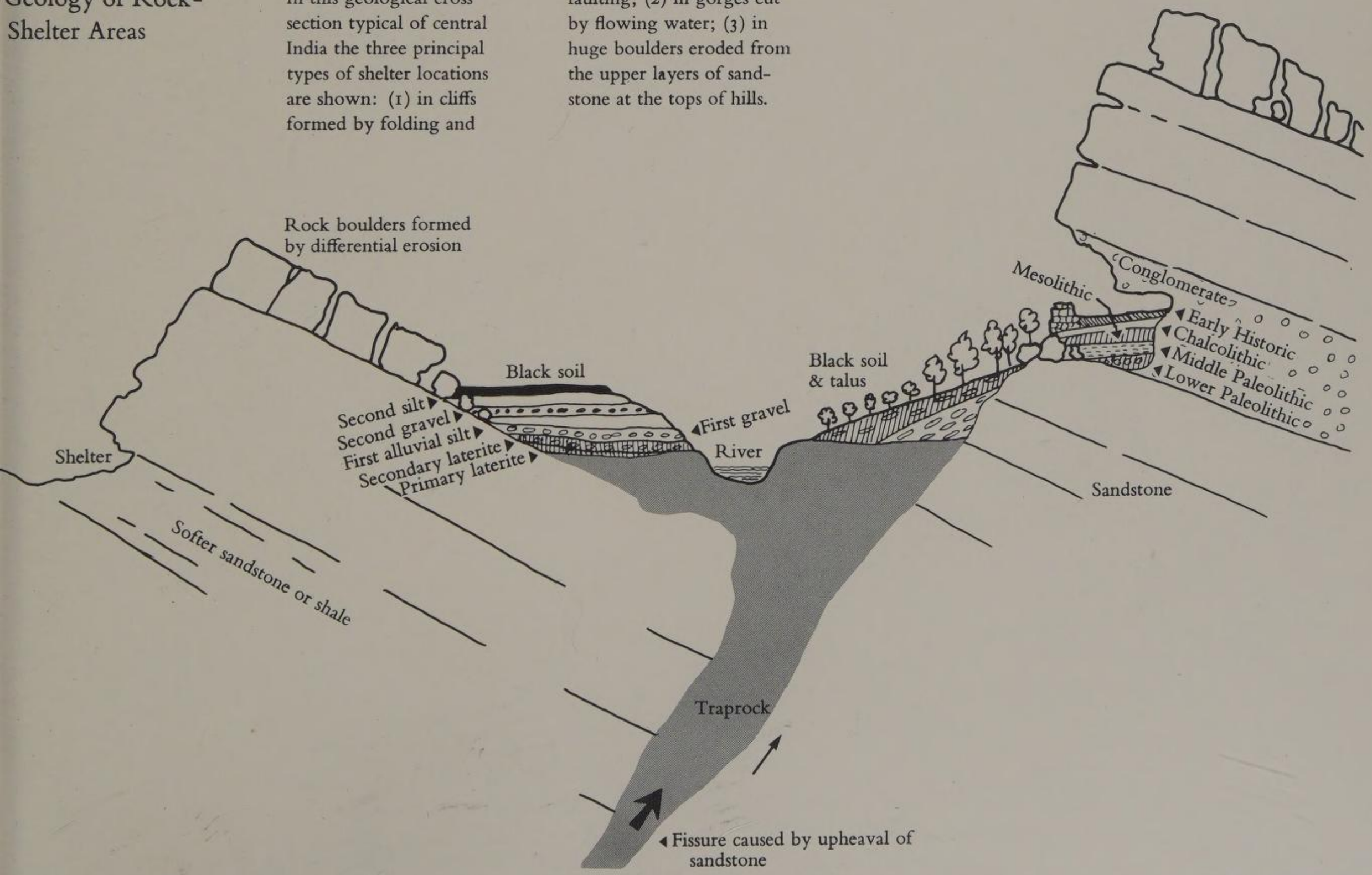
Most of the shelters are in the walls of canyons cut by rivers, or in the steep sides of mesas from which the surrounding country has been eroded away. The principal exception to these two types of location is found on low mountains where a stratum of rock on top has been separated by differential erosion into huge boulders whose lower sides have been cut by wind and water into habitable shelters. All three of these formations are illustrated in the drawing below.

In some cases the shelters are well up on one side of a gorge, as at Bhaldaria near Mirzapur, with thorn trees, scrub, and vines clinging to the rock, and a stream far below. In other cases, as at Adamgarh, the shelters are in large boulders at the edge of a plain, now a richly cultivated area, but probably, at an earlier time, heavily forested. In still other places, especially at Pachmari, many of the shelters are near the bottom of a gorge so heavily forested that sunlight filters through to the shelters only at the noontime hours.

At Montiruzzi, near Pachmari, the shelters are high enough on the side of a mountain that one can see for miles over the top of a jungle in which the trees are 120 feet high. At Bhimbetka, several low mountains in succession are topped with mushroom-shaped rocks, some of which

Geology of Rock-Shelter Areas

In this geological cross section typical of central India the three principal types of shelter locations are shown: (1) in cliffs formed by folding and faulting; (2) in gorges cut by flowing water; (3) in huge boulders eroded from the upper layers of sandstone at the tops of hills.



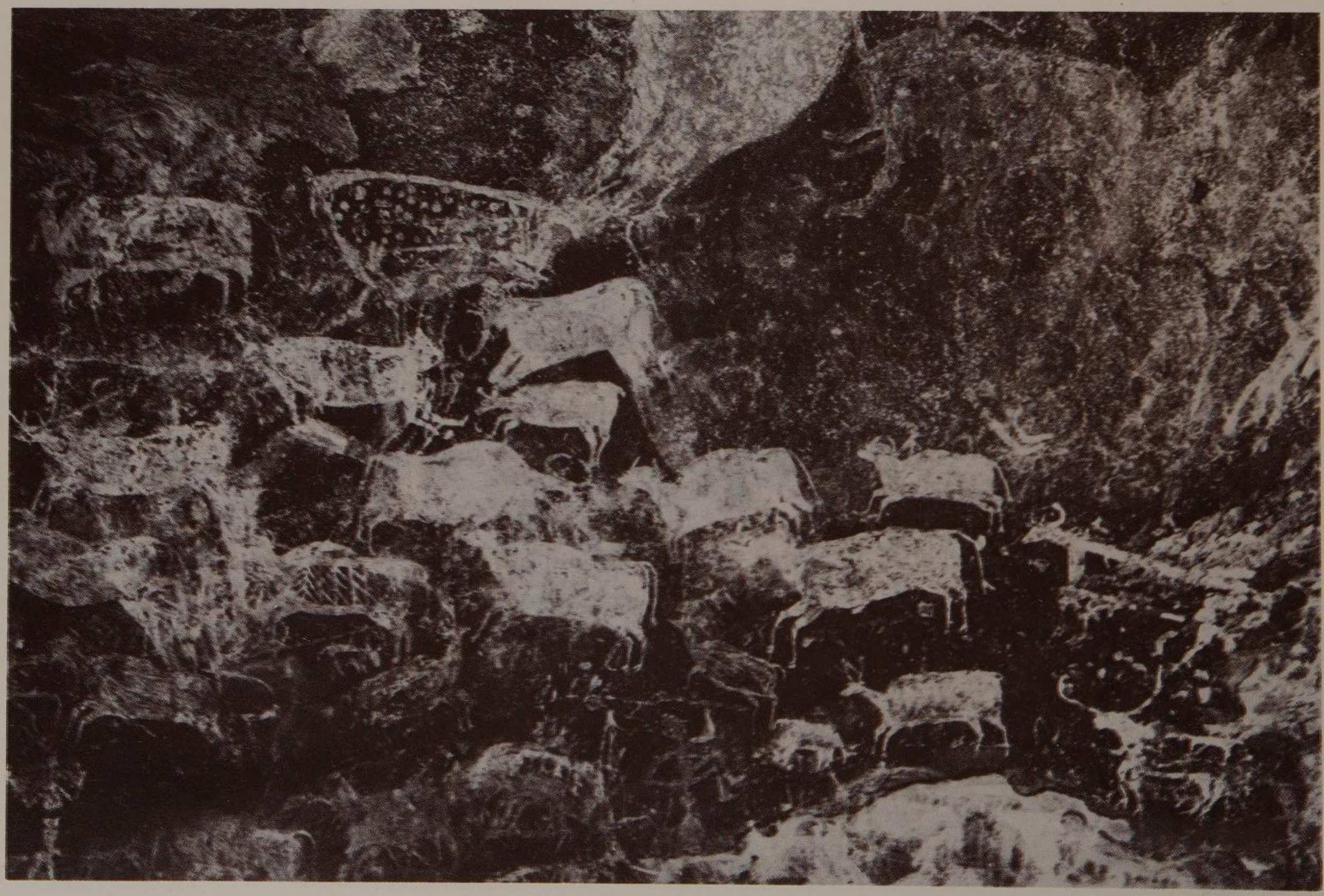
cover nearly an acre and are 60 feet high.Shelters are found near the bottoms of the rocks, screened by a scrub growth of teak and thorn. The summits of the rocks are high enough to provide a view for ten miles down the sandstone slopes blackened by lichens, across a level plain, to distant hills shimmering in the haze.

The Indian painted shelters generally were inhabited over very long periods of times, in contrast to the caves where paintings are found in southern France and northern Spain. In these latter areas the paintings are usually located in the remote depths of labyrinthine caverns. Some are so inaccessible they can be reached only with the help of ladders, by swimming underwater, or by wriggling though tunnels barely large enough to admit a small person with arms extended in front. There are few signs that these caverns were ever inhabited in the vicinity of the paintings, although some traces have been found which suggest that ritual torches or fires and animal sacrifices may have occurred while the pictures were being painted or viewed on ceremonial occasions.

The painted shelters in India, on the other hand, like those of eastern Spain and the southern Sahara, show many signs of habitation. The Indian shelters range from cubbyholes 6 feet long, 4 feet deep, and 3 feet high to huge recesses 100 feet long, 25 feet deep, and 15 feet high. Most fall near the middle of these extremes. There was usually water nearby, both for humans and for the wild animals that provided part of their food supply. The shelters were relatively defensible; they were good lookouts for animals browsing, grazing, or drinking; and they provided protection from summer sun and monsoon rain. Frequently they were oriented toward the south, which would allow the low winter sun to make them more comfortable.

Within the shelters, the paintings are placed both on the rear walls and on the ceilings. Those on the walls are usually arranged roughly horizontally, while those on the ceiling are oriented in almost any direction, with no apparent scheme of composition. The paintings range in size from a three-inch miniature of a leaping mongoose to a very few life-size paintings of bison, buffalo, or the ancestors of modern cattle. There are very faint pigmentations that may be traces of more large paintings, but they cannot be identified. Most of the subjects occupy spaces of about

Horizontal lines of many animals at Bhimbetka.



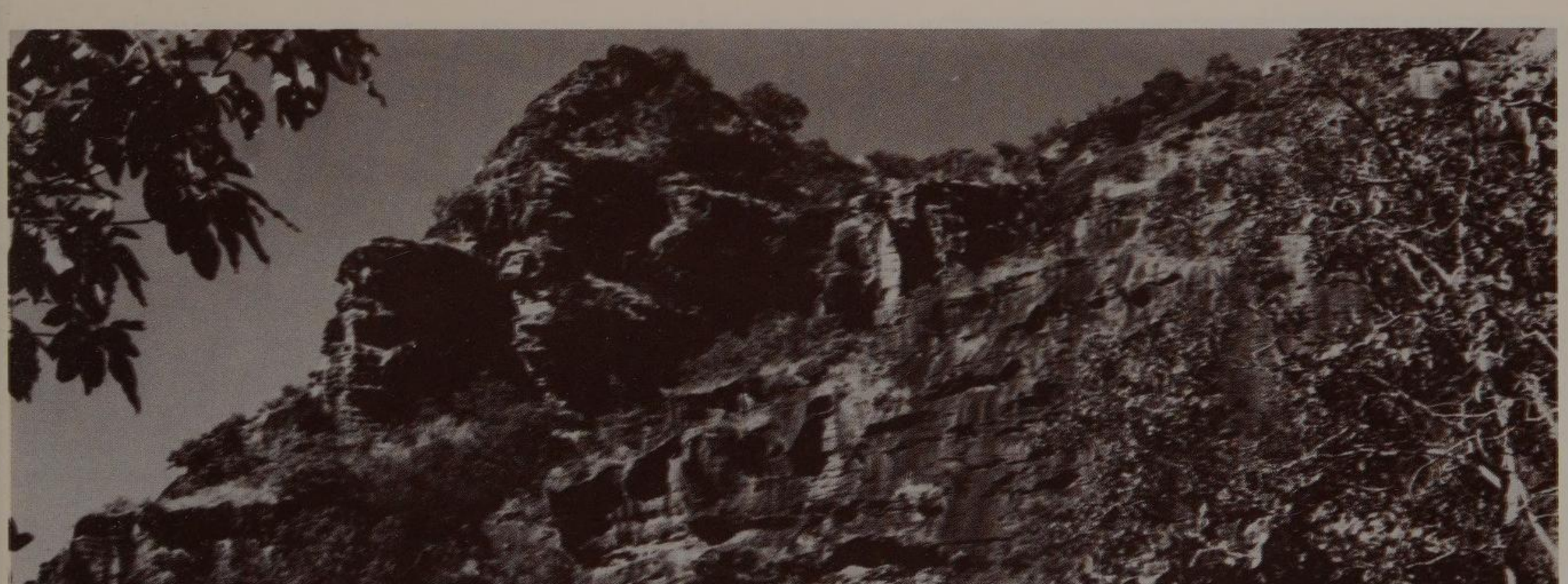
River gorge near Ahiraura, Mirzapur District
Gorge contains Bhaldaria shelter, discovered in 1880 by John Cockburn of the Archeological Survey and rediscovered by the authors in 1966.

Monteruzzi Cliff, Pachmari, formed by faulting and folding
Halfway up the cliff there is a picture of dancers holding hands in a line about 15 feet long.

15 inches by 15 inches. In some shelters, as at Raisen, the paintings are spaced with enough regularity to create the effect, even if unintentional, of a large composition. Many of the apparently later pictures show a group of figures, both animal and human, and clearly tell a story or depict many elements in a complex situation, like a tiger hunt or armed conflict.

The physical condition of the paintings varies: some are as sharp and clear as if they had been painted yesterday; some so faint that they can only be seen by the casual visitor when they are traced out by a trained observer. Some are partly encrusted, but only a few have suffered from this to the same extent as paintings in the limestone shelters of eastern Spain. All but a few are at least slightly eroded. They would probably strike the average visitor as a little less dramatic than that of the somewhat better preserved paintings of the southern Sahara.

In the majority of locations, paintings have been successively superimposed several times on those underneath. The result, especially at Kharvai, Bhimbetka, and Pachmari, is such a confused tangle of images that it takes much time to sort them into separate identifiable figures.



Animals are the most frequent subject matter, with humans second, and symbols or purely decorative devices third. Indian bison, buffalo, cattle, antelope, deer, elephants, rhinoceros, wild boar, and dogs appear most frequently. The identifiable species of antelope are the nilgai, the pronged-horn black buck, and the tiny chinkara. The deer include the chital, or spotted deer, the hog deer, the barasingha or swamp deer, and the sambar. Smaller animals include the porcupine, hare, squirrel, tortoise, lizard, frog, jackal, leech, centipede, and the vicious wild Asian bee. The tiger, leopard, hyena, cheeta, crocodile, and scorpion are often shown.

The birds can be identified with some certainty as eagles, vultures, cranes, storks, snipe, spoonbills, stilts, peacocks, crows, and jungle cocks, the ancestors of modern poultry. There are occasional fish. The wild ass and two strains of horses occur, one of which appears to be the Przewalski, now nearly extinct and found only in central Asia. But with the exception of this horse, the cheeta, and the rhino, all of these creatures still survive in central India. In fact, in the course of many years of finding and studying shelters we encountered most of them either directly, or by their spoor.

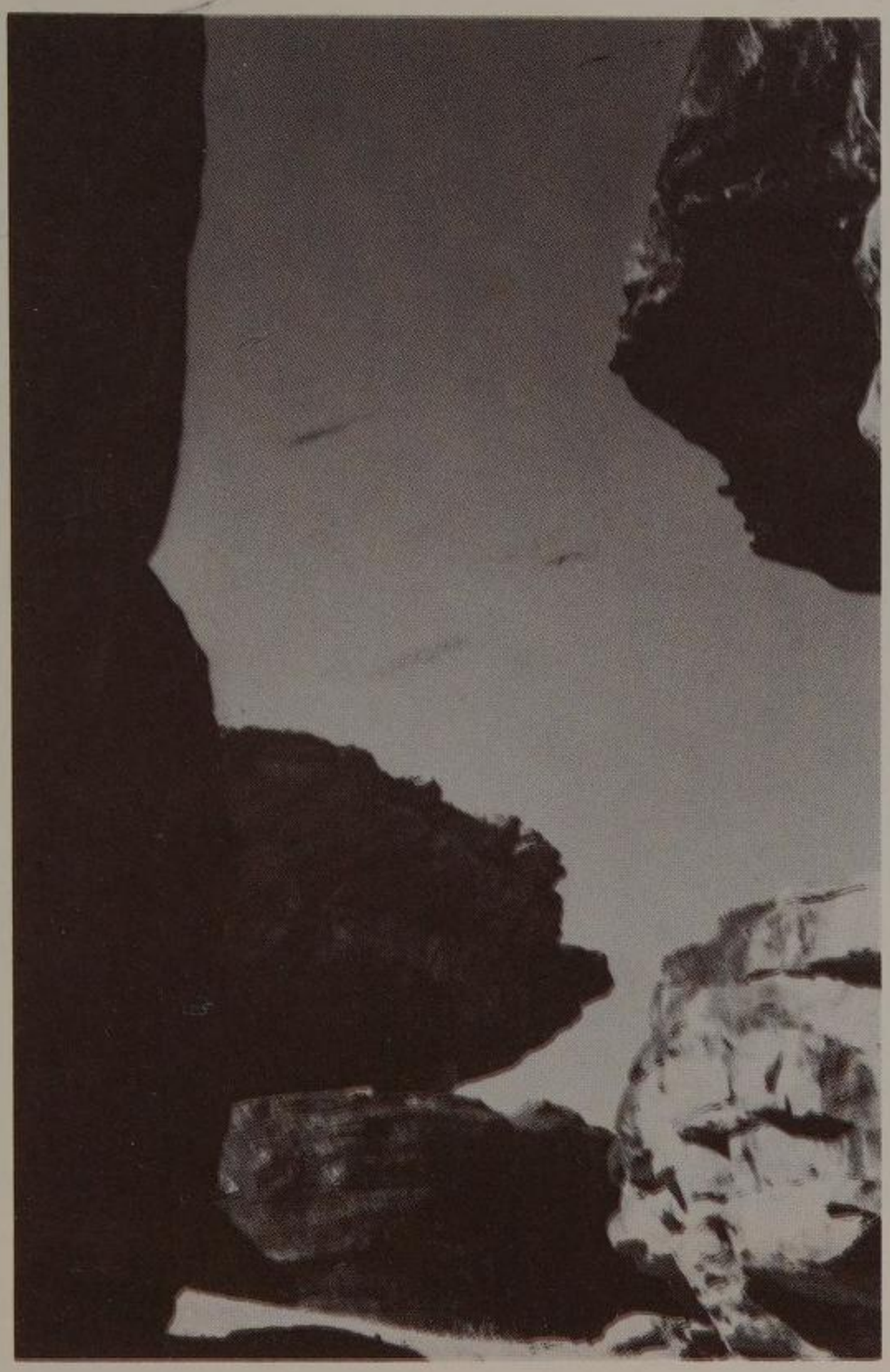
Beginning with the third style of painting* humans appear, and thereafter they are present in a wide range of activities, principally hunting, dancing, and fighting.

From very early periods until quite recently there is a steady procession of symbols such as the cross, the circle, the swastika, and hutlike, fencelike, or traplike designs.

The pigments used by the artists varied with the period and style. Three styles are painted with white pigment made from kaolin or limestone. There are a few instances, as at Pachmari, of black or deep purple obtained from magnesium oxides. In ten instances at Bhimbetka, copper compounds were used to produce a bright shade of green. But the great majority of paintings was done with hematite or other oxides of iron, to provide colors in red, yellow, orange, or brown. Most of these compounds are usually available in surface deposits not far from the paintings. The minerals were probably ground to a powder with a mortar and pestle or in the natural hollow of a nearby rock. We experi-

The authors in Ram Jeroka shelter, Raisen (25 miles east of Bhopal) The shelter is profusely painted with many animals and a few humans.

*For a detailed description of rock-painting styles, see Appendix 2.



Adamgarh shelter, in an outcrop of sandstone on a low hill rising above the flood plains of the Narmada River
The shelter contains the very faint traces of a very early painting. It is the only shelter in India provided with a guard against desecration.

mented with this process and found it not difficult.

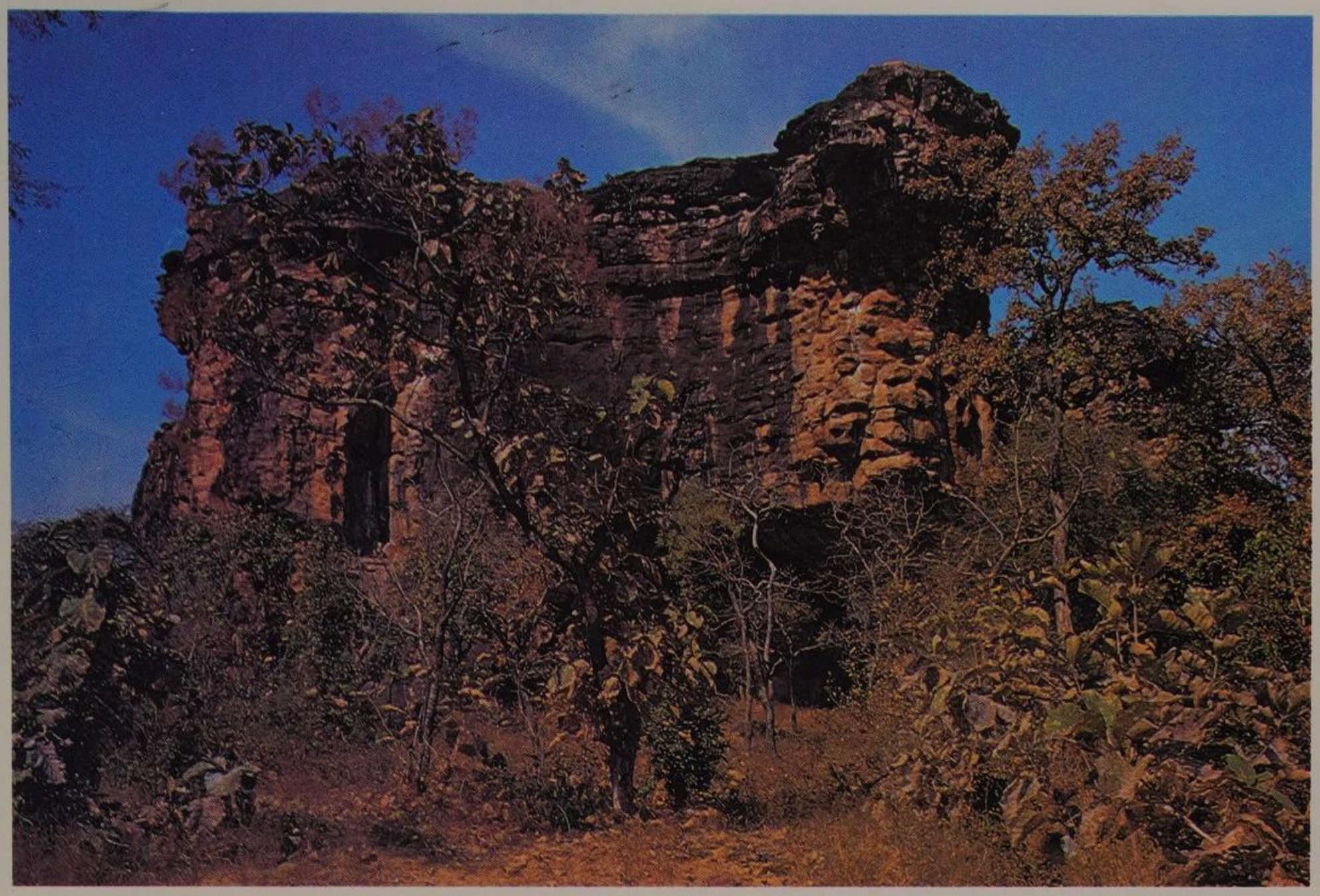
The powder was mixed with water and applied, in most periods, with a brush, probably made of a palmetto twig with one end pounded free of pulp to expose the fibers. We tried various kinds of twigs and found palmetto much the best. After the pulp has been pounded off and the fibers left to dry for a few minutes, the result is a stiff brush that will hold a substantial load of pigment, and with which firm, sharp lines can be drawn. Experiment also showed that a skilled artist can produce small outline figures quite rapidly, but that paintings involving large areas of wash were laborious projects. In one style it appears that a finger was used to lay on a thick line of kaolin. There is one instance at the Kabra Prahad shelter near Raigarh of powder blown or sprayed onto a wet surface. There is no evidence in India of the use of fats as solvents for the pigments, as may have occurred in France.

VSW (right) and helpers in a painted shelter cut by a tributary of the Wainganga River. This is the setting for Rudyard Kipling's *Jungle Stories.*

View from the highest point on Bhimbetka Mountain, overlooking the fertile plains of a former lake bottom. Engraved at the top of this 65-foot-high rock is an inscription in Brahmi, the earliest known Indian script.

View from Monteruzzi shelter overlooking the tops of 80-foot trees in the foreground.

Auditorium Rock, Bhimbetka Mountain (25 miles south of Bhopal), formed by differential erosion of the top layer of the mountain A wind-eroded cave in the rock has many paintings and was the scene of VSW's most successful excavation.



Many shelters contain a profusion of pictures, usually arranged in horizontal lines without any effect of composition.

In some shelters the ceilings are decorated. The pictures are oriented in all directions.

Experiments by the authors have demonstrated that all the rock-shelter pictures could have been done with pigments made by grinding local rocks, palmetto stem brushes (or porcupine quills for fine work), and water cups made of folded leaves.

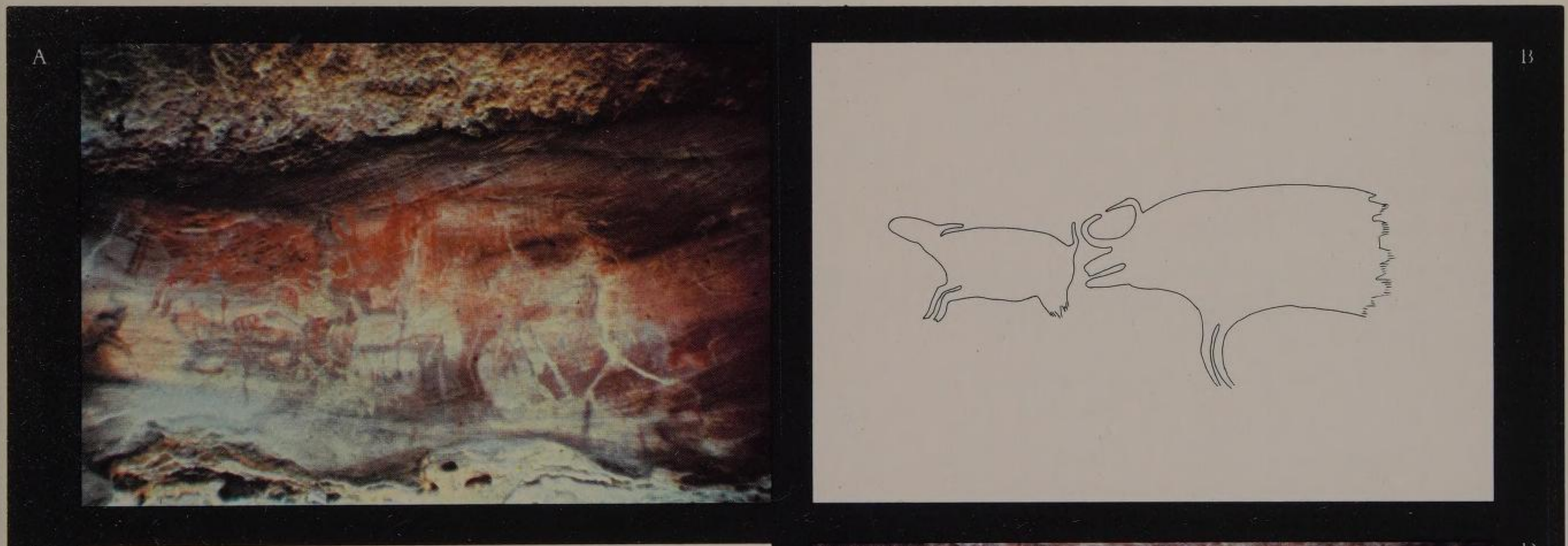
Kharvai
Pictures from several periods are often superimposed upon each other.

A Unrestored photograph of an Indian bison chasing a hog deer, from Bhimbetka. The rear portion of the bison was either left unfinished or has eroded away. The painting is in stlye 7.

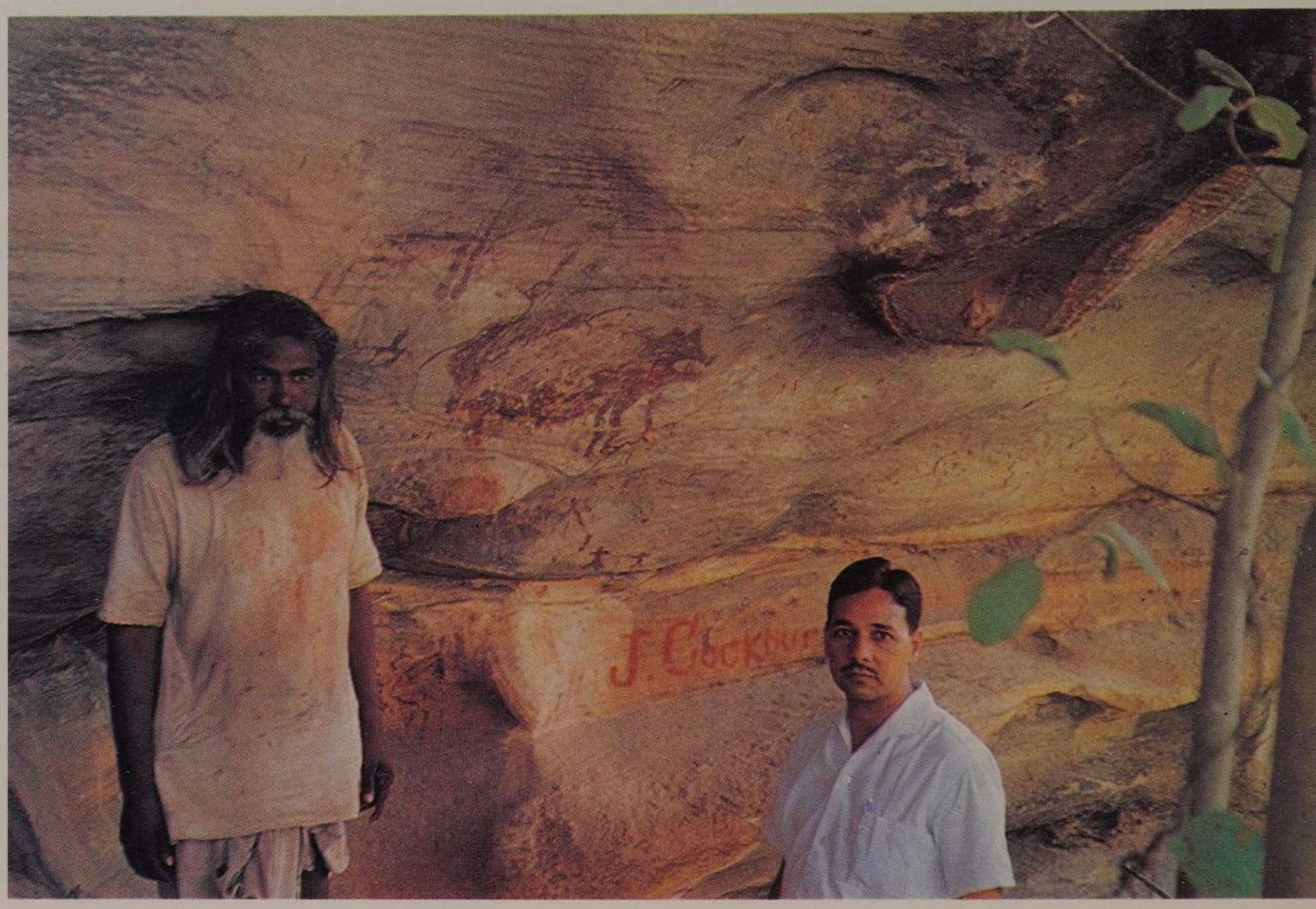
B Pencil tracing of the projected image of the two animals.

C Pencil tracing filled in with opaque acrylic pigments matching original color as closely as possible.

D The original slide projected over the water-color copy of the two animals and photographed, completing the reconstruction.



Bhaldaria shelter, near Ahiraura, Mirzapur District
The shelter was discovered in 1880 by John Cockburn of the Archeological Survey; his graffiti appear in the background. A boar in agony (see p. 77) shows above Cockburn's name. The two men helped the authors find the shelter.



Style chart
Painted by VSW
Reading from left to right and from top to bottom, this chart summarizes the five periods and twenty styles into which presently known rock-shelter paintings have been tentatively classified.

2

Who Painted the Pictures?

Although a complex civilization developed in the Indus Valley of northwest India two millenia before our era, recorded Indian history does not begin until the scant accounts of Cyrus' invasion in the 6th century B.C.E. and Alexander's invasion in 326 B.C.E. The first domestic record is in the inscriptions carved in Bramhi script upon monuments and rocks setting forth the edicts of the Emperor Asoka (c. 274–236 B.C.E.) Visitors from Persia, Greece, and China left records that slightly supplement the Asokan edicts, but we are largely dependent upon the work of linguists, archeologists, and anthropologists for such light as we have upon the origins of early Indian civilizations and their predecessor cultures.

Anthropologists have made their contribution through studies of some of the many tribal groups that, because of their inaccessible location, have remained relatively unaffected by more advanced cultures. From these studies it is possible to infer something about the life of much earlier people. Linguists and other scholars have been able to translate and analyze an immense volume of the sacred and secular oral "literature" that was meticulously memorized and passed on from generation to generation until it was recorded in written form soon after the beginning of our era. The internal evidence of these epics, myths, ceremonial prescriptions, religious traditions, legal, aesthetic, and ethical codes places their origin at a time at least 1,500 years B.C.E.

For still earlier times, archeologists have been able to supplement this record by excavation of early villages, towns, cities, temples, and fortifications. Evidence from these sources places the beginnings of urban civilization in the Indus Valley as early as 2500 B.C.E. and, on a vastly greater time scale, archeology has been able to establish the presence of tool-using man at a very much earlier date. Rapid advances in Indian archeology during the last twenty-five years have given us a complete record of the evolution in India of all of the forms of stone tools familiar to Western archeologists—a record that extends unbroken from very crude pebble tools to the coming of copper early in the second millenium B.C.E., and of iron at about 1000 B.C.E.

As a result of these several methods of reconstructing the evolution of human life on the subcontinent, Indian scholars have tentatively proposed the table on page 12 showing the sequence of cultures from the Lower Paleolithic (early Stone Age) to the present time. (For illustrations of the stone tools and weapons mentioned in the table, see the photographs and drawings on pages 22–27.) It is not possible to assign absolute dates for this sequence of cultures because in the vast area of the subcontinent different cultures coexisted in nearby locations. In some places "early" cultures persisted until recent times; in other places "advanced" cultures, like that of the Indus Valley, developed at "early" dates.

The earliest tools in this list were made by men who may have come from elsewhere, or may have evolved within the subcontinent. The pebble tools of the Soan industry in the Punjab are similar to those associated elsewhere with preman. But no skeletal remains have been found with these early tools. There is no way of knowing whether the succession in the long series of cultures indicated by the stone tools shown on pages 23–25 was brought about by invasion from outside India, or by evolution within. The types of tools found in successive layers of debris excavated in the painted rock shelters are often separated by sterile layers of windblown or waterborne soil showing no evidence of human habitation. But whether new people from elsewhere moved into the shelter at later times or descendants of the earlier people reoccupied the shelter after evolving greater skills in making tools and weapons is impossible to determine.

We do know, however, from linguistic and archeological evidence, that within the last four thousand years India has been invaded repeatedly from outside. Beginning early in the second millenium B.C.E., a long series of Indo-Aryan invaders from Central Asia entered India from the northwest and destroyed or were absorbed by the superior urban civilization of the Indus Valley, which had probably already been weakened by floods possibly caused by tectonic disturbances. The invaders penetrated all of the northern part of India and killed, drove out, or interbred with the more primitive cultures they encountered as they moved into eastern and central India. The extent and degree of their influence is still roughly measurable by the Sanskrit roots of the languages spoken by their present-day descendants.

At an unknown time and in an unknown

manner the southern part of the peninsula was occupied by people speaking an entirely different language, now known as Dravidian. This language provided the roots of the four languages now spoken in southern India.

In addition to these two major language groups there are hundreds of other minor languages that have no relation either to Sanskrit or Dravidian. Many of these languages are spoken by people who are officially classified by the central Indian government as "tribals" and are widely regarded as predecessors of both the Aryan and Dravidian-speaking people. In many parts of India, as in the remote hills of Bastar State, or in the Western Ghats, these tribals remain completely outside the village economies based

The Sequence of Cultures

Although the sequence of prehistoric cultures in India, as inferred from the stone tools found, is very similar to that found in other parts of the world, the absolute dates are still very uncertain. It appears that the three phases of the Paleolithic were probably somewhat later than the comparable periods in west Asia and probably southwest Asia.

1. *Paleolithic*		Lower	(a) Pebble tools; big flakes; chopping tools. (b) Crude hand axes. (c) Symmetrical hand axes; cleavers; dwellings along river banks, on low foothills, open plateaus, near tool material sites, and in rock shelters; early food gathering; simple hunting and fishing.
		Middle	Small hand axes; scrapers; cleavers; points; borers; skin clothing (?); improved food gathering and hunting; dwellings as above.
		Upper	Blades; burins; advanced food gathering; fine tools for cutting, skinning, and hunting; skin clothing; spears; engraving on bones; rock-shelter painting (?)
2. *Mesolithic*	8000 B.C.E. (?)		Microliths; lunates, points, blades, awls, scrapers, inverted arrow points, crude pottery; bow and arrow; harpoon fishing; domesticated dogs; wide distribution of increased population; *rock-shelter paintings*.
3. *Neolithic*	2500 B.C.E.		Ground or polished stone axes; ring stones; better pottery; slash and burn agriculture in the hills; settled agriculture on flood plains; domesticated goats, sheep, pigs, cattle, fowls; simple huts; painting in rock shelters; beginning of Indus Valley culture.
4. *Chalcolithic*	2300 B.C.E.		Copper axes and ornaments; decorated pottery; cultivation of wheat, rice, peas, lentils, linseed, sesamun, spinning and weaving; arts and crafts; beads; mud and wattle houses; terra cotta figures of bulls; stone blades; Indus Valley cities and Aryan invasions.
5. *Early Iron*	1000 B.C.E.		Iron tools and weapons; copper ornaments; punch marked and silver coins; improved pottery and dwellings; terra cotta and copper figures.
6. *Early Historic*	300 B.C.E.–800 C.E.		
7. *Medieval*	800 C.E.–1300 C.E.		
8. *Recent*	1300 C.E.–Present		

on settled agriculture, and equally outside the mainstream of Hindu culture. Some, as in the Western Ghats, were until recently still principally dependent upon hunting and gathering. Others, as in Assam, have progressed to slash-and-burn agriculture. Still others have taken up irrigated agriculture, as have the Bhils of Malwa. And some have moved into the slums near the steel mill at Bilhai.

Studies have been made of groups of these tribals in their relatively "pure" state as diverse in language and appearance as the Veddas of Ceylon, the Negritos of the southern mountains, the Gonds of the eastern Ghats, and the Saori of Orissa. These tribals have been somewhat transfused with the genes of later comers; occasionally they have adopted some form of

The convention of drawing humans in triangular form goes back to at least the early Neolithic.
Style 9
Pachmari
Unrestored photo

In modified form, it reappears in the men of style 13 at Ahiraura.
Unrestored photo

one of the dominant languages; and they have usually developed some form of economic exchange, yet they remain distinct in many ways. They may not be the unalloyed descendants of the earliest Indian *homo sapiens*, but they have clearly been in India since before the arrival or evolution of the Aryan and Dravidian-speaking peoples.

It appears nearly certain that the painters of the cave pictures were the non-Aryan, non-Dravidian-speaking ancestors of the present-day tribals of central India. In support of this conclusion are two kinds of evidence, negative and positive.

The most specific negative evidence is that there is nothing in the early rock paintings to associate the artists with the technically more advanced cultures. The Aryans who eventually dominated central India in the areas where rock paintings can now be found were cattle-raising, chariot-driving horsemen who practiced agriculture on permanent locations in the fertile valleys and raised sheep, goats, and pigs nearby. None of this appears in the early paintings. On the contrary, the subject matter is exclusively wild animals and humans in conflict with them.

The positive evidence is that the paintings are in rock shelters, many of which show unmistakable evidence of having been lived in by people using stone tools or weapons identical with those shown in many of the earlier paintings. The later cultures lived in villages, huts, towns, temples, or fortifications—not in rock shelters. Moreover, many of the early paintings show scenes of dances, hunts, or what appear to be magic rites still practiced in similar forms by tribal people in many parts of India.

In considering this evidence it is important to repeat that for at least 4,000 years, from the Neolithic period of settled agriculture and domesticated animals almost to the present, two quite separate cultures have existed side by side in many parts of India. In the valleys, especially in the vast plains of the Indus and Jumna–Ganges, rivers, cities flourished, technology rapidly advanced, and the fine arts grew luxuriantly. Great civilizations rose and fell. The valley cultures that evolved during these cycles produced

Some support for the view that the people who painted the pictures were the ancestors of present-day tribals may be seen in the wood carvings on contemporary death markers of the Korku tribe, who have no horses, but whose dead are shown mounted on the horses of those who defeated their ancestors.

metallurgy, coinage, sewage disposal systems, defensive fortifications, trade, specialized crafts, decorated pottery, copper and terra cotta figurines, lost-wax metal casting, sculpture in marble, sandstone, and granite, temples cut from solid rock, and as at Ajanta and Ellora, frescos comparable with those of Egypt, Crete, and Greece.

But in the remote hills, jungles, swamps, and deserts, life at the hunting-and-gathering level went on almost undisturbed. The shelter dwellers adopted from the superior culture only a few basic elements, such as pottery and metal tips for their arrows. They continued until a few hundred years ago to paint the walls of natural rock shelters with simple pictures reflecting their own lives and, eventually, the lives of the valley people as viewed from the hills. Their paintings became a partial record of their isolated culture.

Gradually the pressure of the valley cultures drove out many of the shelter people and the painted record stopped. And although the tradition continued until a few hundred years ago, the few remnants that exist today are only

Muria hunters in the mountains of Bastar State.

The front wall of the Gond tribal headman's house at the foot of Bhimbetka Mountain is painted each year by the women of the village. Triangular humans appear at lower right, along with a hand. Symbols resemble those from style 11; Buddhist trees resemble those from style 17.

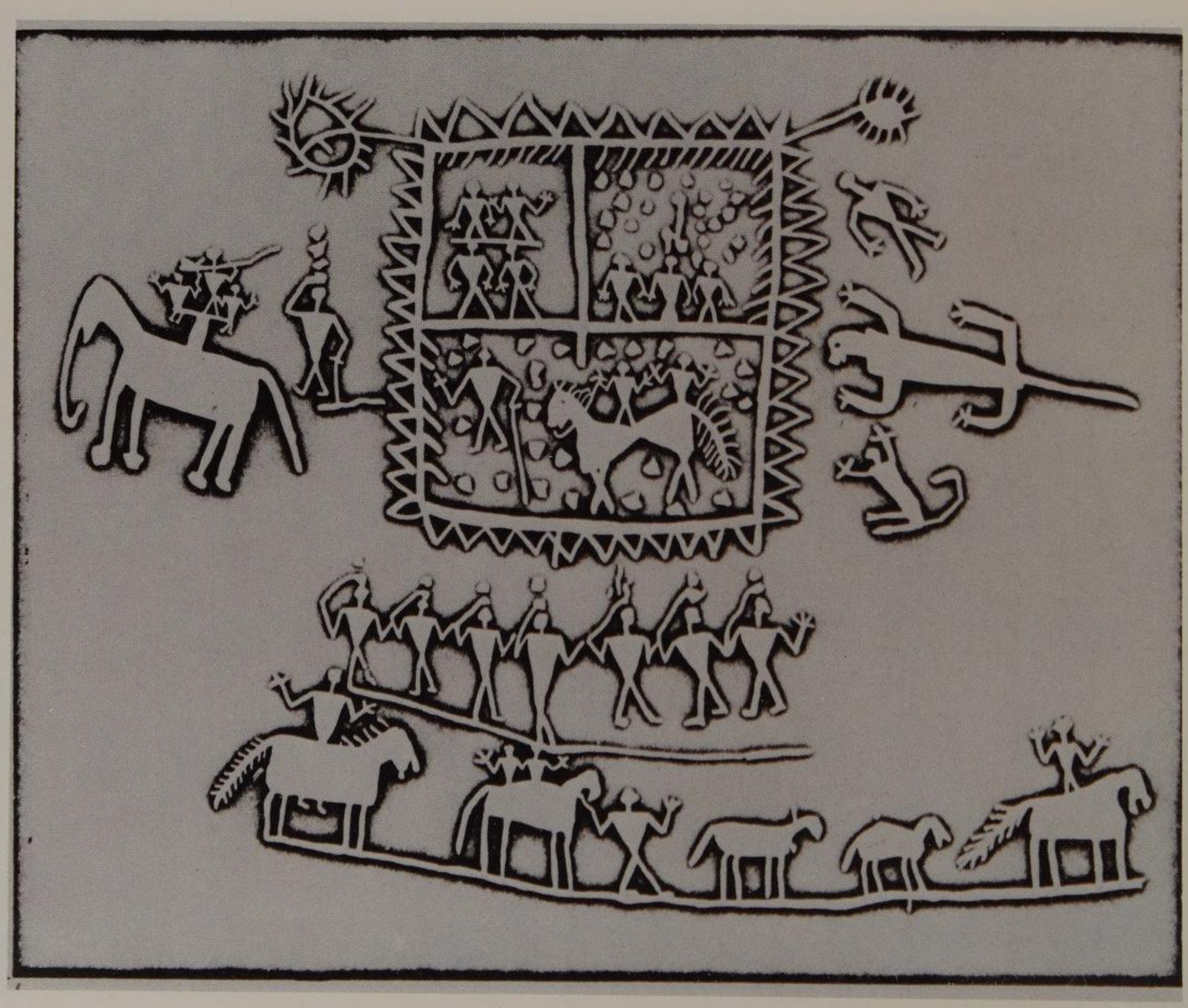
tenuously linked to the earlier examples. Among the survivors of the Korku tribe in the Mahadeo Hills near Pachmari, for example, the dead are honored by their relatives with carved teakwood plaques placed under a sacred tree. The subject of the carvings is totally unrelated to the lives of the deceased, but the style and some of the content is similar to that of late-period paintings in shelters a few miles away.

In the tiny Gond village of Bhinyapur at the foot of Bhimbetka Mountain, which has more than 400 painted rock shelters, the life of the villagers is not very different from that of Neolithic times. The front wall of the headman's hut in Bhinyapur village is whitewashed, and on special festival days the women of the village decorate his front wall with paintings, a few of which can be seen as at least distantly related to late-period shelter paintings. Yet the people of the village knew very little about the nearby paintings until outsiders began to tramp through the ankle-deep dust of the single "street" on their way up the mountain.

Elsewhere, descendants of the shelter dwellers now live in wattle huts in which one or more walls are coated with clay and covered

. . . and among the Saora tribe of Orissa.

Similar conventions still appear in the designs of Bison Horn Muria . . .



with whitewash. Here the tradition of painting on walls continues. But the subjects are so conventionalized or Hinduized that they provide no connection with the hunting past.

Communal hunting, reinforced by dancing, survives today among the Boyas, Todas, Gonds, and others in forms strikingly similar to those shown in early rock-shelter paintings. Several tribal groups make images personifying evil that are then ceremonially decapitated, suggesting that the shelter paintings of antelopes pierced with spears may also have served as magic invocations of success. But, in general, present tribal practices show few direct relationships with the cave-painting tradition.

Although the evidence disclosed by excavation makes it clear that the people who painted the pictures often lived in the painted shelters, it does not follow that they lived only in the shelters. Thousands of tools typical of cultures from the Lower Paleolithic to the Neolithic have been found along river banks and at the tops of ridges containing stone suitable for making tools. It seems probable that the painters were at least partially migratory,

Saora girls in the mountains of Orissa.

following their food animals as they moved in search of water and vegetation; going to river banks in fish-spawning season; or spending a few weeks at well-known quarry sites to replenish their stocks of tools and weapons. If this assumption is correct, they occupied the shelters only seasonally. The rest of the time they were in the open, or in very crude arbors. There are occasional symbols among the paintings that might be interpreted as representing houses, but the meaning is not clear enough to permit conclusions.

The early pictures suggest that neither men nor women wore clothes. From the Kushan period (200–300 C.E.) on there are many pictures showing elaborate costumes. It seems likely, however, that these were not the dress of the shelter people but of the people from the higher cultures whom they observed. Even late in the historic period, many pictures show little or no evidence of clothing.

The pictures do show, however, that they knew how to prepare animal skins. One picture at Shahad Karad and scores of pictures at Raisen show the skins of various animals, including the leopard, stretched out tight to dry, without head or claws. These skins might have been used only as rugs or robes, but bone points or stone burins found in Mesolithic layers of the excavations in the shelters could have been used for crude sewing with sinew or gut. Neither the paintings nor the excavations reveal more than this.

On ceremonial occasions, typified by scenes of dancing, decorations composed of strips of fabric or skin attached to elbows, knees, and waists are common in locations as far apart as Bhopal and Mirzapur. They may also have painted their bodies, but there is no evidence of this in the paintings. This is in sharp contrast to the rock paintings of the southern Sahara which clearly show tattooing or body paint.

The shelter pictures and the animal bones found in excavations might seem to indicate that the principal food of the shelter dwellers was big game. There are examples of smaller animals, such as the mongoose at Raisen and lizards at Bhimbetka; the emphasis, however, is clearly on bison, buffalo, deer, antelope, rhinoceroses, and tigers. But if, as seems likely, the vegetation of central India was more or less similar to its present state, there were easier ways of making a living than chasing antelope and deer or facing the terrifying bison, buffalo, and wild boar. Among the possibilities still used by tribal people in the more remote parts of the area are roots, tubers, bulbs, legumes, wild grains, fruits, nuts, buds, ant eggs, beetle grubs, crawfish, minnows and small fish, frogs, lizards, snakes, eels, birds and birds eggs, rabbits, squirrels, monkeys, honey, and the newborn young of the wild boar, deer, and antelope. Add to this an occasional porcupine, mongoose, turtle, or peacock, and there was relatively little need to challenge the elephant or rhinoceros.

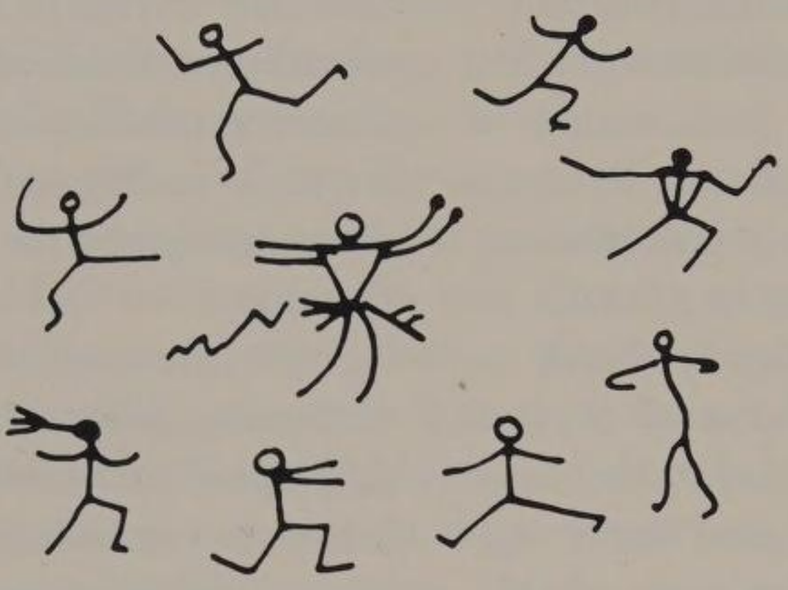
Why, then, do these spectacular animals loom so large in excavations and paintings? In the excavations, most of the long list of possible foods would leave little trace. Only the larger bones would be likely to survive. With regard

to the paintings, there are two possible answers. In the early period the big animals may have been objects of fear or worship. In the later periods, they may have been the objective of community hunting efforts preceded by dancing and magic rituals. We will speculate more extensively about this in Chapter 4.

It seems clear from the many paintings of dance scenes that dancing had a central role in the ceremonies and lives of these people. An existence that in the main was precarious and fearful seems to have been enriched by the rhythm, ritual, and release of communal celebrations. Moreover, dancing could have served as a means of inducing disciplined common effort. The capture of larger animals must have required the

Dancing

Dance scenes appear frequently in the pictures of all periods; some of the styles are shown in these drawings by VSW.



Simla Hill, Bhopal

Simla Hill, Bhopal

T. B. Hospital Hill, Bhopal

Shiva Mandir, Bhopal

Singanpur

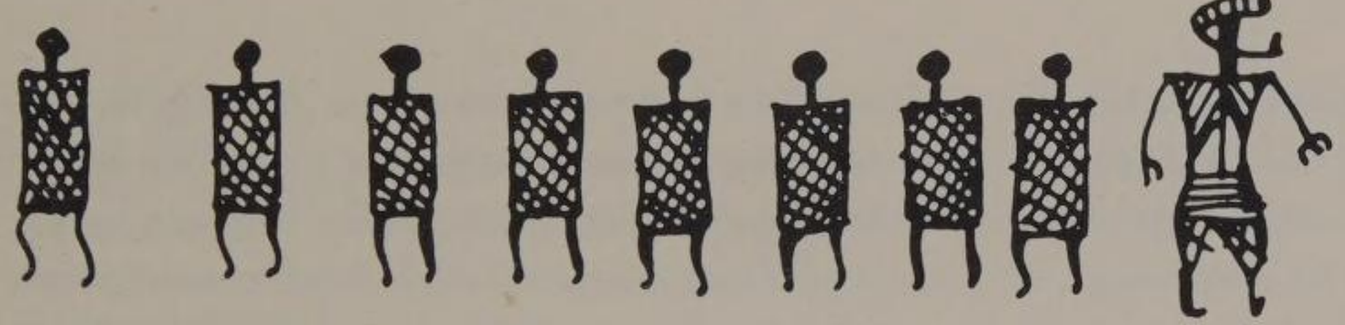
Modi

Bhimbetka

well-organized cooperation of many men. The power of hypnotic suggestion in inducing extraordinary feats of strength, courage, and endurance is now well recognized. This influence over individual behavior can be reenforced by group solidarity, especially when focused by traditional ceremonies and cult objects. Thus the dance ceremonies could have helped to weld normally fearful and individualistic hunters into a skillful hunting party ready to die, if necessary, in facing the charge of a wild boar, or to sit for hours in a cramped position awaiting the instant for throwing a spear into an antelope at a starlit water hole.

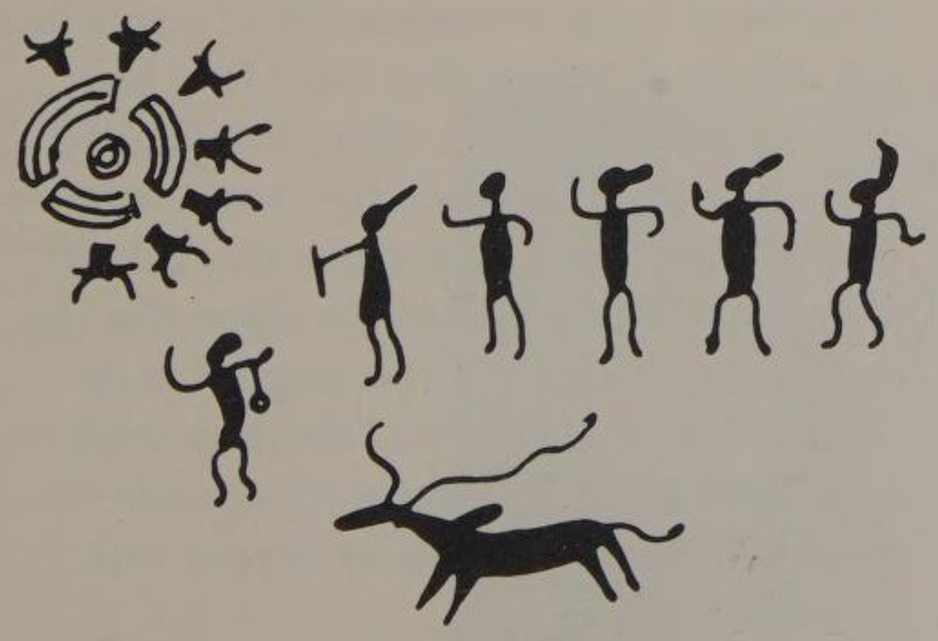
The shelter paintings provide no evidence of the way in which their occupants prepared their

Modi



Raisen

Kharwai



Sujanpura

The drummers of the Hill Muria still dance like the drummers of style 18.

food. If recent observations of tribal practices can be taken as a guide, much of it was eaten raw. Many items could be roasted on hot coals, grilled over a fire, or parched on a hot stone. With the advent of pottery, food could be boiled. From the excavations in the shelters it appears that pottery came into use there during the third millenium B.C.E. The pottery shards in the lower levels are very crude. But the later vessels are so well fired and decorated that they were probably acquired by trade with the villages, rather than made by the shelter dwellers.

There are no pictures of humans in conflict from the earlier periods; from the later periods there are many. In some of the latter, the fighters are similarly decorated, suggesting intertribal conflict; in others the difference in costumes and weapons is so pronounced—at Adamgarh, for example, mounted horsemen are shown attacking warriors on foot—that conflict between valley people and shelter dwellers is indicated. Intertribal conflicts probably began as the invading cultures took over the hunting grounds of the shelter dwellers, disturbing territorial understandings among the hunters and forcing them to fight each other for the remnants. The shelter people recorded both the intertribal conflicts and those between themselves and outsiders.

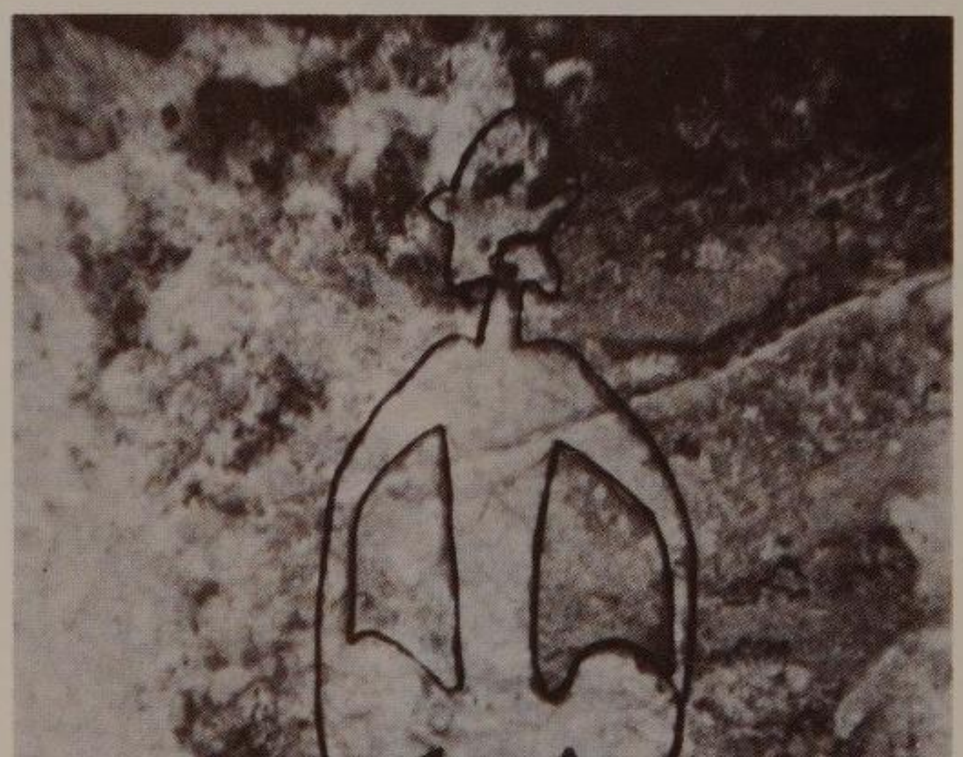
A final question remains: were the artists specialists with scarce talents, or could almost anyone be called on to perform? The evidence from the paintings is that both answers are needed for different times and places. Analogies from elsewhere support this conclusion. The paintings at Lascaux, in southern France, and at Altamira, in northern Spain, are technically so superb that it is difficult to believe they could have been done by anyone without talent, training, and a tradition of skills on which they could draw. But anthropologists of contemporary cultures in parts of Africa and Australia report that the painter may often be anyone assigned to the task. And most of the pre-Columbian engravings of Arizona and New Mexico are so crude that they could have been done by anyone with patience.

The rock paintings of central India range all the way from those as simple as the drawings of

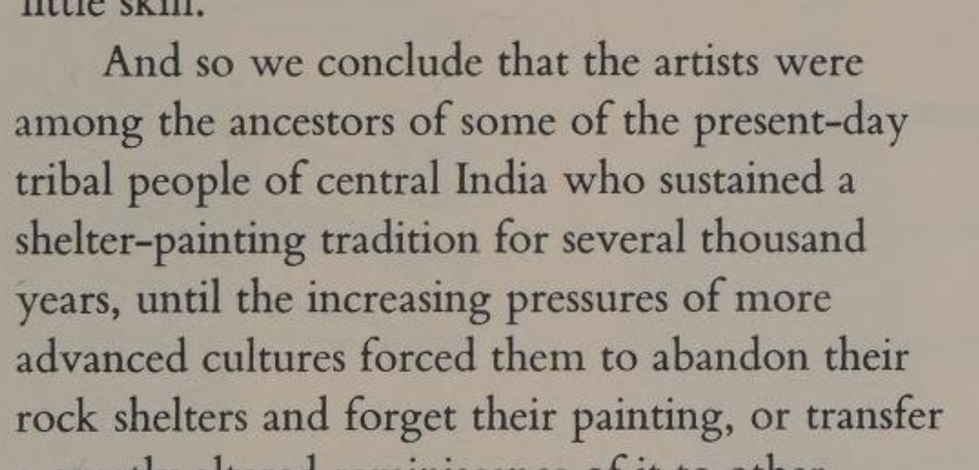
In the remotest hills of southwestern Madhya Pradesh, long lines of young men and women still dance as the paintings show people doing six thousand years ago.

a fourth-grade child to those which in accuracy, grace of motion, economy of line, or skill in composition show a combination of talent and training. Most of the naturalistic paintings are nearer the second extreme than the first. But the symbols or decorations and many of the highly conventionalized abstractions show relatively little skill.

And so we conclude that the artists were among the ancestors of some of the present-day tribal people of central India who sustained a shelter-painting tradition for several thousand years, until the increasing pressures of more advanced cultures forced them to abandon their rock shelters and forget their painting, or transfer a greatly altered reminiscence of it to other surfaces and materials.



Tambourine player
Style 13
Bhimbetka
Early Historic
About 12 in.
Restored



Castanet dancers
Style 18
Bhimbetka
Medieval
About 10 in.
Restored

3 Dating the Pictures

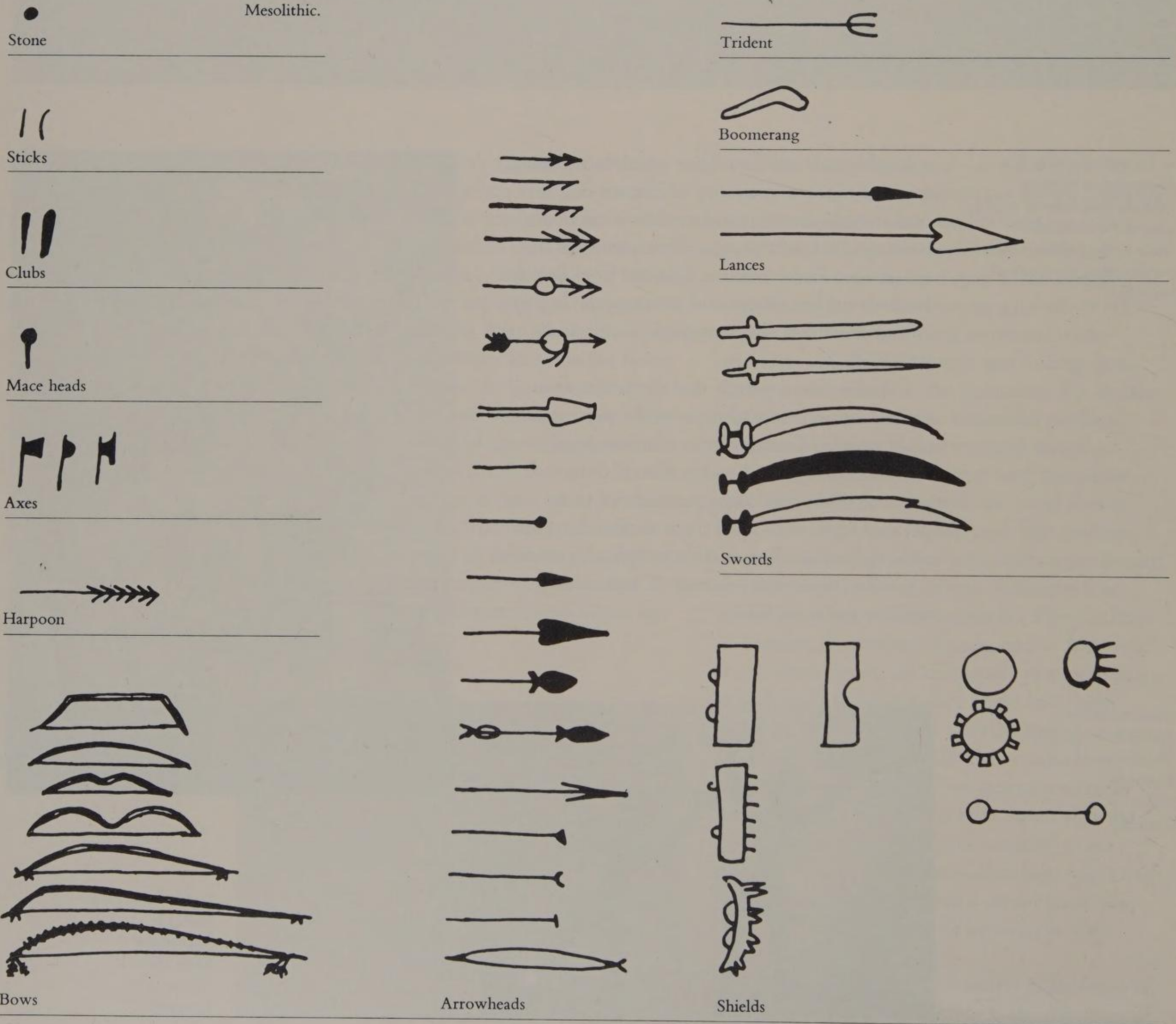
In the previous chapter we have suggested the probability that Indian rock pictures were painted during a long span of time, beginning in the early Mesolithic, or before, and continuing until a few hundred years ago. Proving this hypothesis and being more precise about the dates of particular paintings present difficulties that have been evident in the efforts of others to date prehistoric paintings in other parts of the world. But the task is not hopeless, and at least a beginning can be made.

There are four possible approaches:

A. analysis of the present physical condition of the paintings;
B. classification of successive superimpositions of different painting styles upon each other;
C. correlation of the subject matter of paintings with already known *periods* of prehistory, or

Weapons in the Rock Shelters

Weapons and tools found in shelter paintings or excavations. Most of these are associated with the Mesolithic.



known *dates* within the historical periods.

D. correlation of datable materials found in excavations with the subjects, styles, and colors of paintings on the walls or ceilings of excavated shelters.

A. Physical Condition

Blurring. When mineral pigments are applied to a porous rock surface such as limestone in France or Spain, or sandstone in the Sahara and India, the pigments form a bond with the rock. They cannot be washed off and could only be removed by grinding or sandblasting. This is why the paintings last so long. But it also means that in time the sharp lines of the brush become blurred as the pigment is blotted by the rock surface.

Encrustation. Water exuded by the rock or dripping on it carries soluable chemicals, which gradually form a crust over the painting as the water evaporates.

Patination. A chemical or in some cases a biological change darkens a fresh rock surface, or a freshly painted surface, even under desert conditions.

Erosion. The impact of wind-driven rain or

A Sequence of Lower Paleolithic Tools Found in Painted Shelters

Acheulian Tools

Clacto-Abbevillian Tools

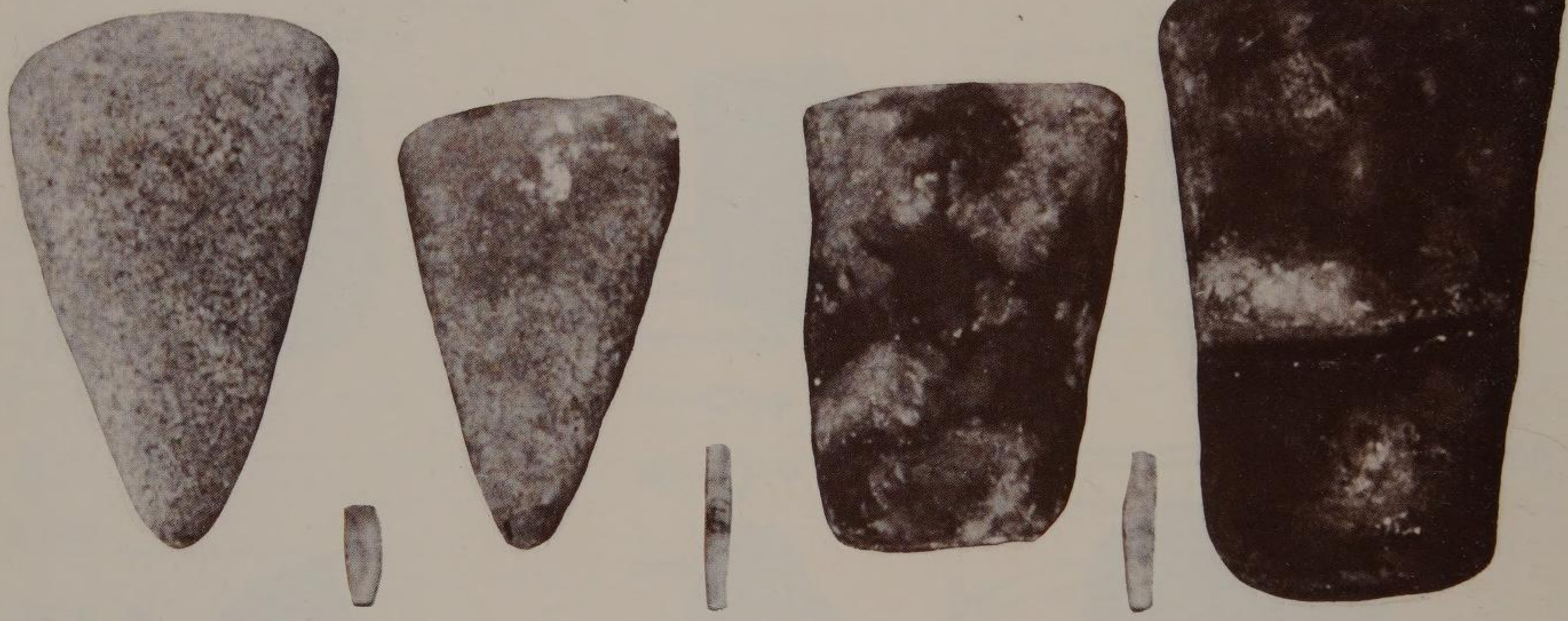
Pebble Tools

sand upon a painting grinds away both the pigment and the surface, leaving the painting, in some cases, as with the elephant at Adamgarh, barely discernible after long scrutiny.

These four changes, help to a limited extent in assigning relative dates to rock paintings. A very faint, much blurred, heavily patinated or encrusted painting is probably older than a vivid and sharply defined painting. But the rates at which all four changes occur depend upon several variables, which may be quite different for two paintings of the same age. Among these are the porosity of the rock, the amplitude of daily and seasonal temperature changes, the degree of exposure to sun, wind, rain, and sandblasting, and the direction of flow of either internal or surface moisture upon or within the rock. These variables are so significant that it is not uncommon to find a rock painting that is bright and sharp at one end but completely obliterated at the other. In addition to this, the flaking of small chips from the rock, as a result of frequent sharp changes in temperature, may ruin a recent painting, while an older painting nearby is better preserved because it is always in the shade.

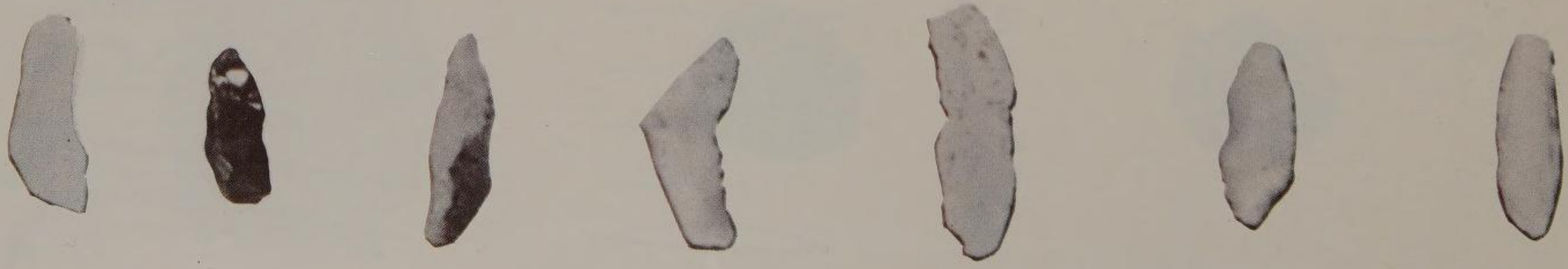
Nevertheless, after taking all these variables

A Sequence of Tools from the Middle Paleolithic to the Chalcolithic Period Found in Painted Shelters.



Neolithic/Chalcolithic

Mesolithic



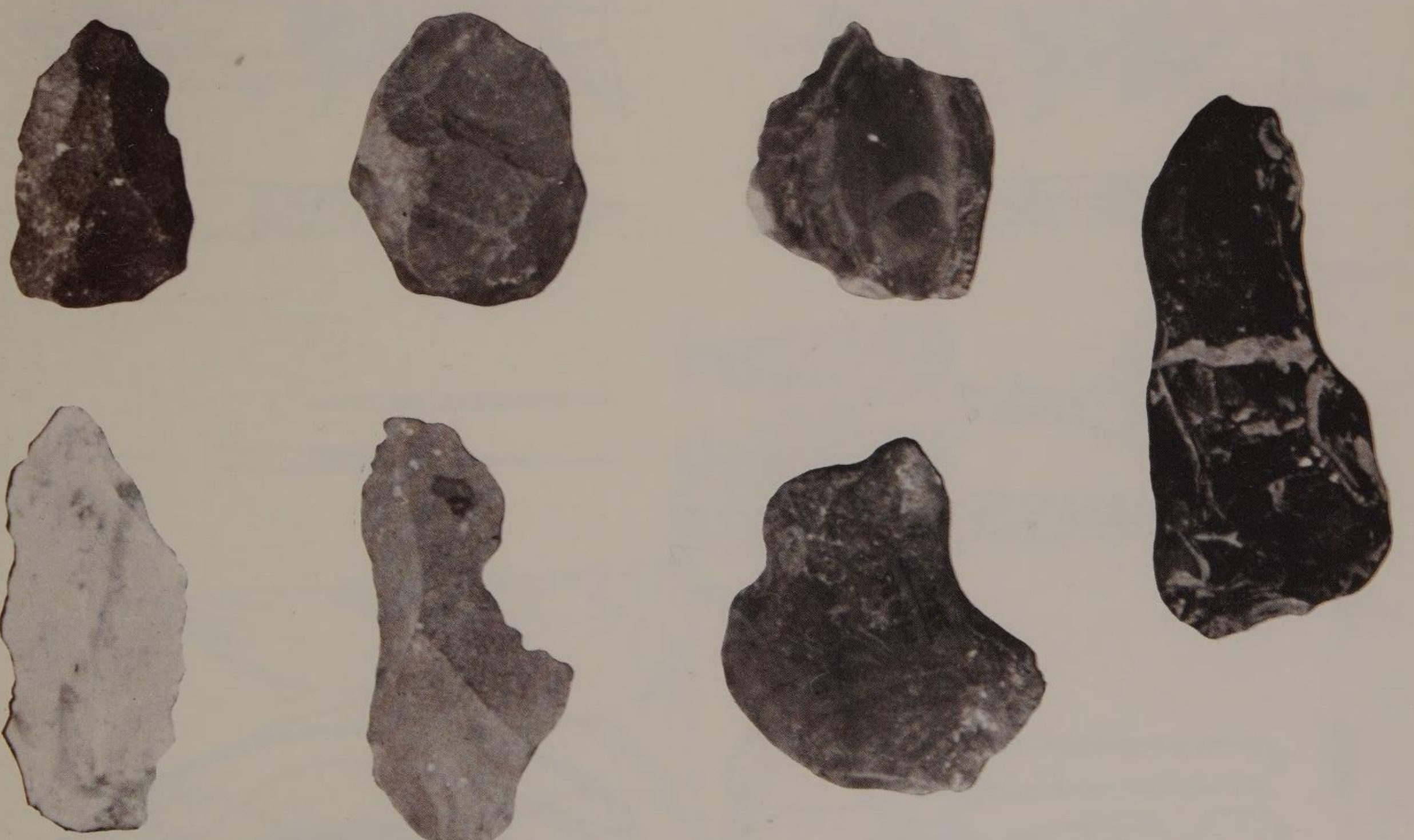
Upper Paleolithic

into account, it is often possible to say that one painting is "obviously" older or later than another, although the amount of stress on the word "obviously" may suggest the degree of uncertainty in the judgment!

B. Classification of Superimpositions

In many locations all over the world a very limited space has been used for painting over and over again for centuries. The later paintings often cover, but do not entirely conceal the earlier ones. Never in one shelter is there a complete sequence of all the possible styles from the earliest to the latest. Since, however, it is possible to classify paintings into styles by subject matter, pigment, and technique, the superimpositions in one shelter can be linked with those of another in a complete sequence. For example, if shelter A has style 2 superimposed on style 1, and style 3 on style 2, while shelter B has style 4 superimposed on style 3, and style 5 on style 4, and shelter C has style 6 superimposed on style 5, and style 7 on style 6, a complete temporal sequence can be established from style 1 to style 7. By this method *relative* dates can be established with certainty, because

Upper Paleolithic



Middle Paleolithic

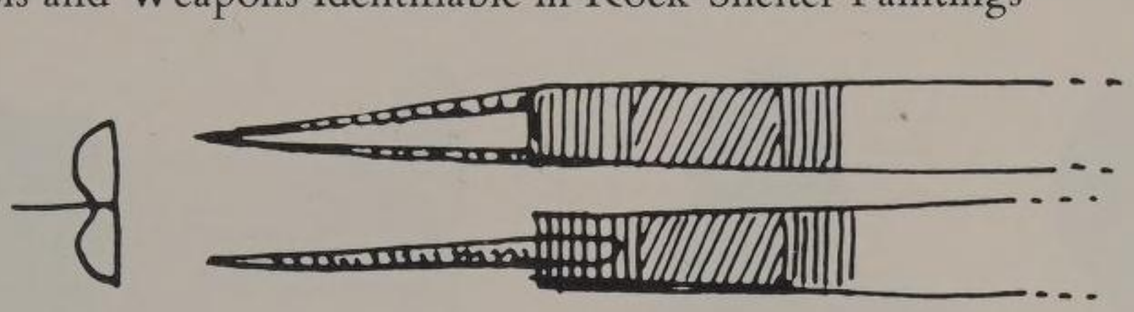
a picture painted on top of another must be later. It is impossible to place the pigment of a later painting beneath that of an earlier one.

Although efforts have been made previously to classify Indian rock paintings into styles, detailed work has been limited to the vicinity of Pachmari, Adamgarh, and Mirzapur. Now, however, as a result of twenty years of searching the gorges and scanning the cliffs of central India, we are reasonably sure that we have samples not only of the principal styles in the thousand or more shelters that have been surveyed, but also a large sample of the superimpositions that reveal the relative dates of the styles. Although this technique provides only relative dates it is an important prerequisite in establishing approximate absolute dates.

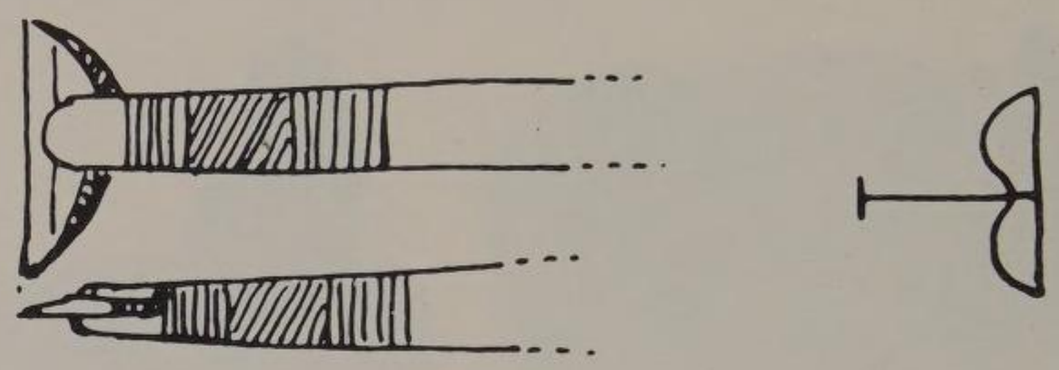
C. Correlation between the subject matter of paintings and already known prehistoric periods, or historic dates.

The most striking illustration of this approach occurs in the many paintings which show pictures of weapons used during the Meso-

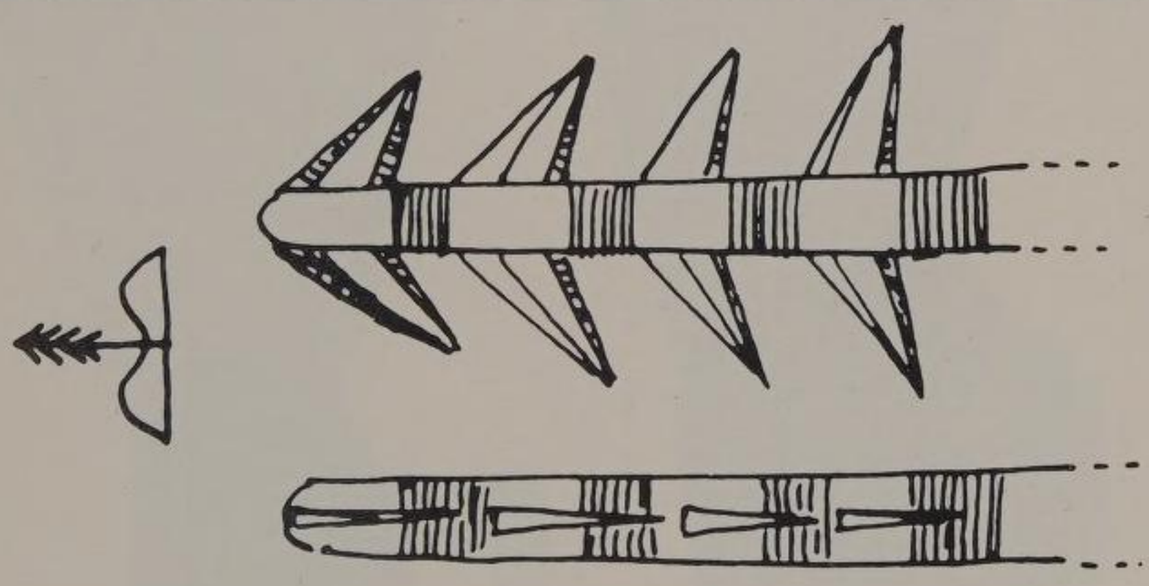
Tools and Weapons Identifiable in Rock-Shelter Paintings



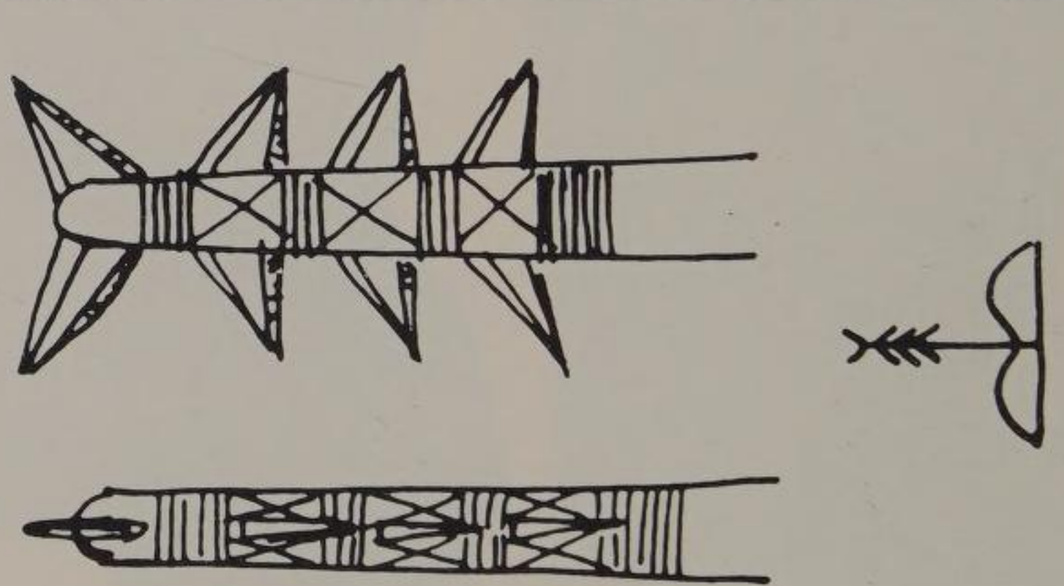
Pointed arrowhead

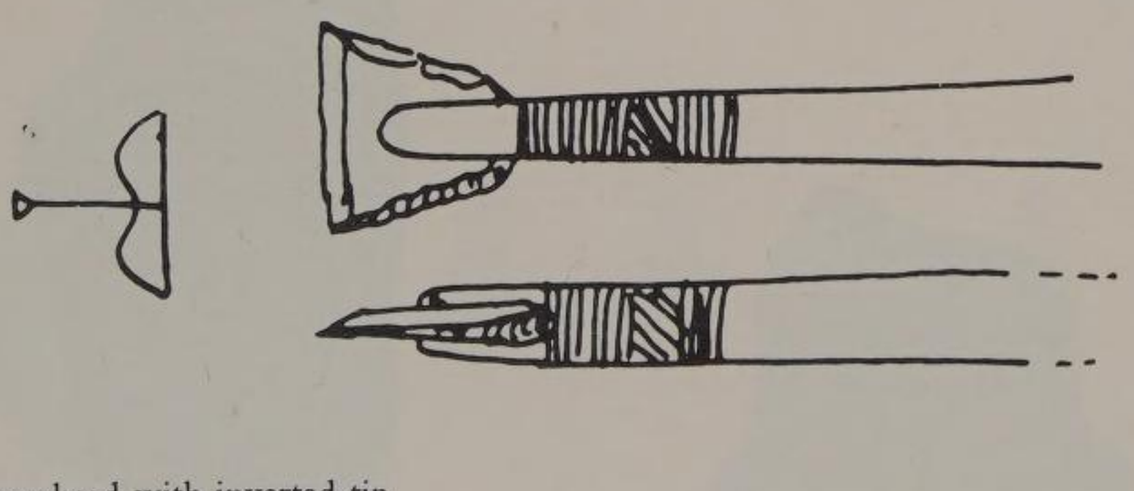


Arrowhead with lunate

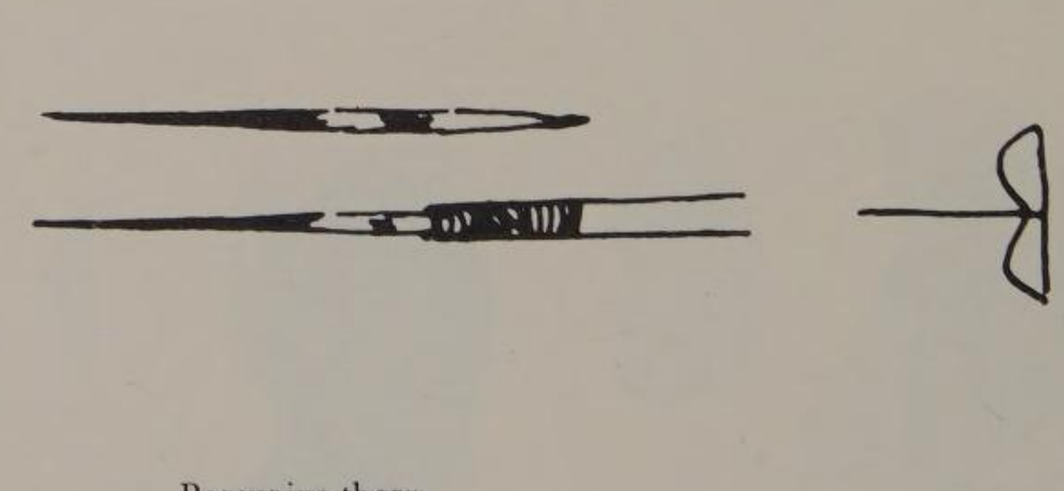


Barbed arrowhead harpoons

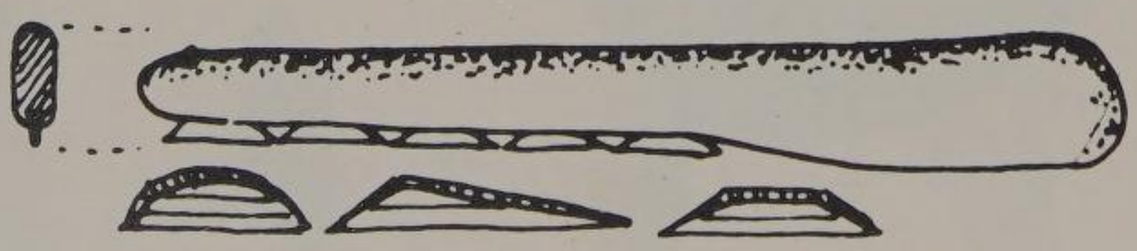




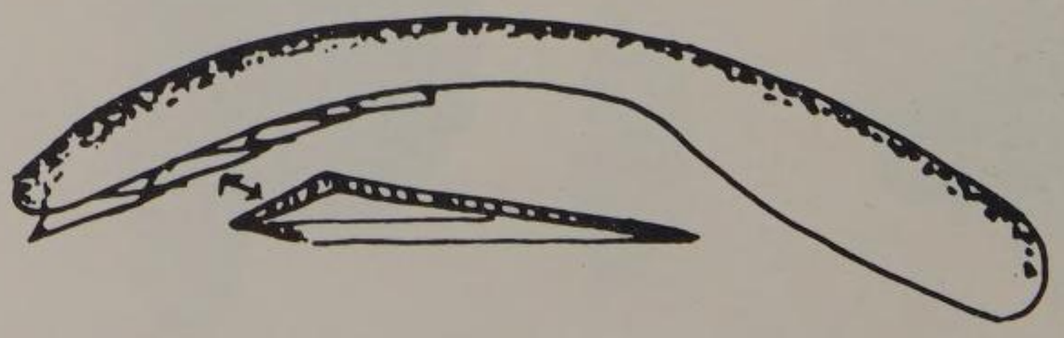
Arrowhead with inverted tip



Porcupine thorn



Knife & scraper

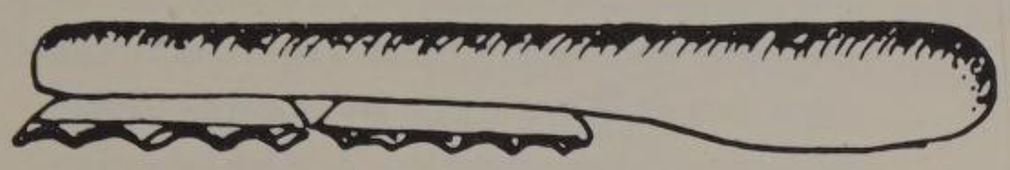


Sickle

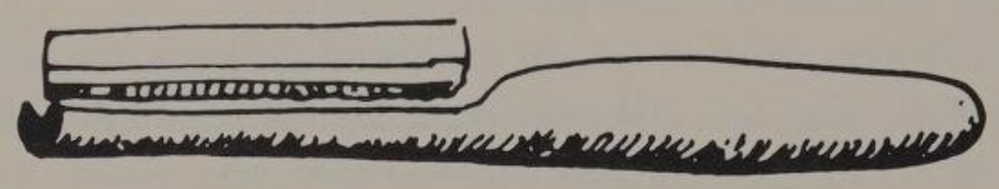
lithic period,* characterized by the use of microliths—the small, carefully shaped pieces of silicates designed to be fitted into bone or wooden handles for use as knives, scrapers, saws, sickles, and barbs, or points for arrows or harpoons. They are easily distinguishable in the paintings from the larger stone flakes or cores of the preceding Upper Paleolithic and the smoothly ground and polished tools of the succeeding Neolithic. In the drawings below, microlithic tools appear starting on the left; contrasting heavier tools are shown on the lower right.

One of the most distinctive types of arrowheads developed during the Mesolithic, not only in India but in other parts of the world, was the "inverted arrowpoint," in which the curved edge of a half-moon-shaped chip, or the point of a triangular piece was inserted into the shaft of the arrow, with a broad cutting edge forward. This is exactly the reverse of the usual conception of an arrow with its small piercing point forward. The reason for this reversal may have been that the broad cutting edge made a slash wound, causing the prey to bleed profusely so that it would weaken rapidly and be easily followed by its trail of blood.

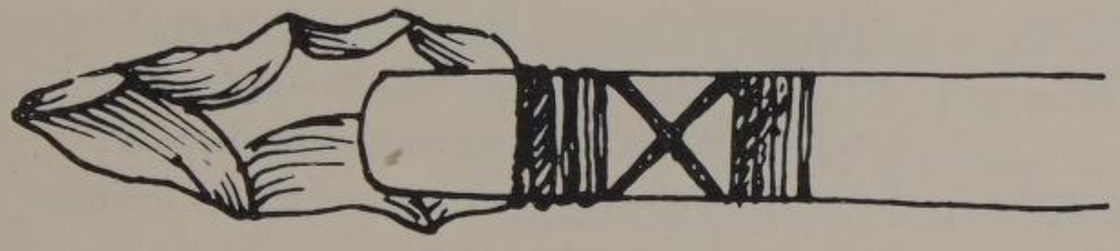
*The Mesolithic is intermediate between the Upper Paleolithic and the Neolithic. Some archeologists, especially in India, decline to use the term, preferring to group the characteristics of the Mesolithic with those of the Upper or Late Paleolithic. We find it still a useful term, however, because it is so clearly associated with microlithic tools.

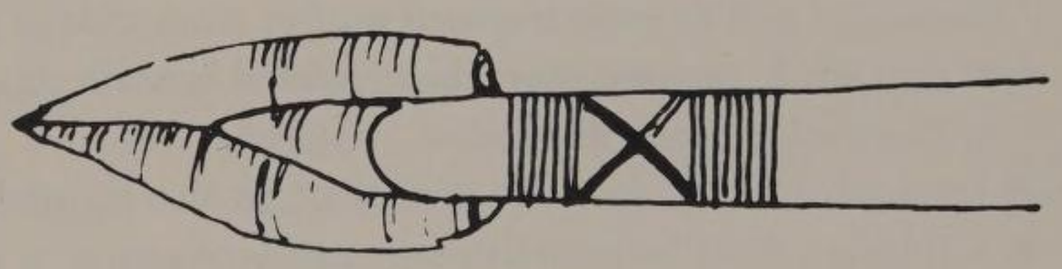


Saw

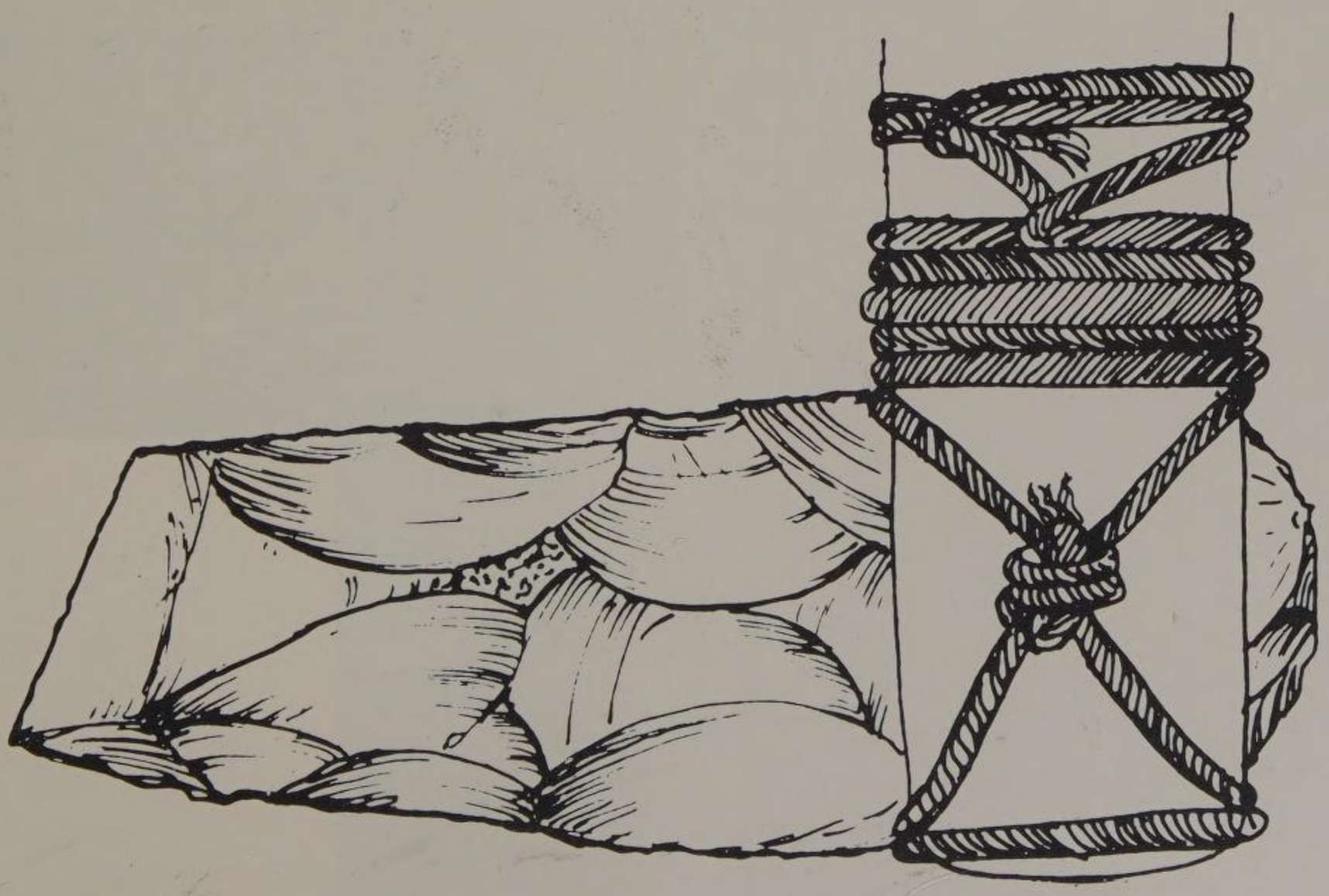


Knife





Spears



Axe

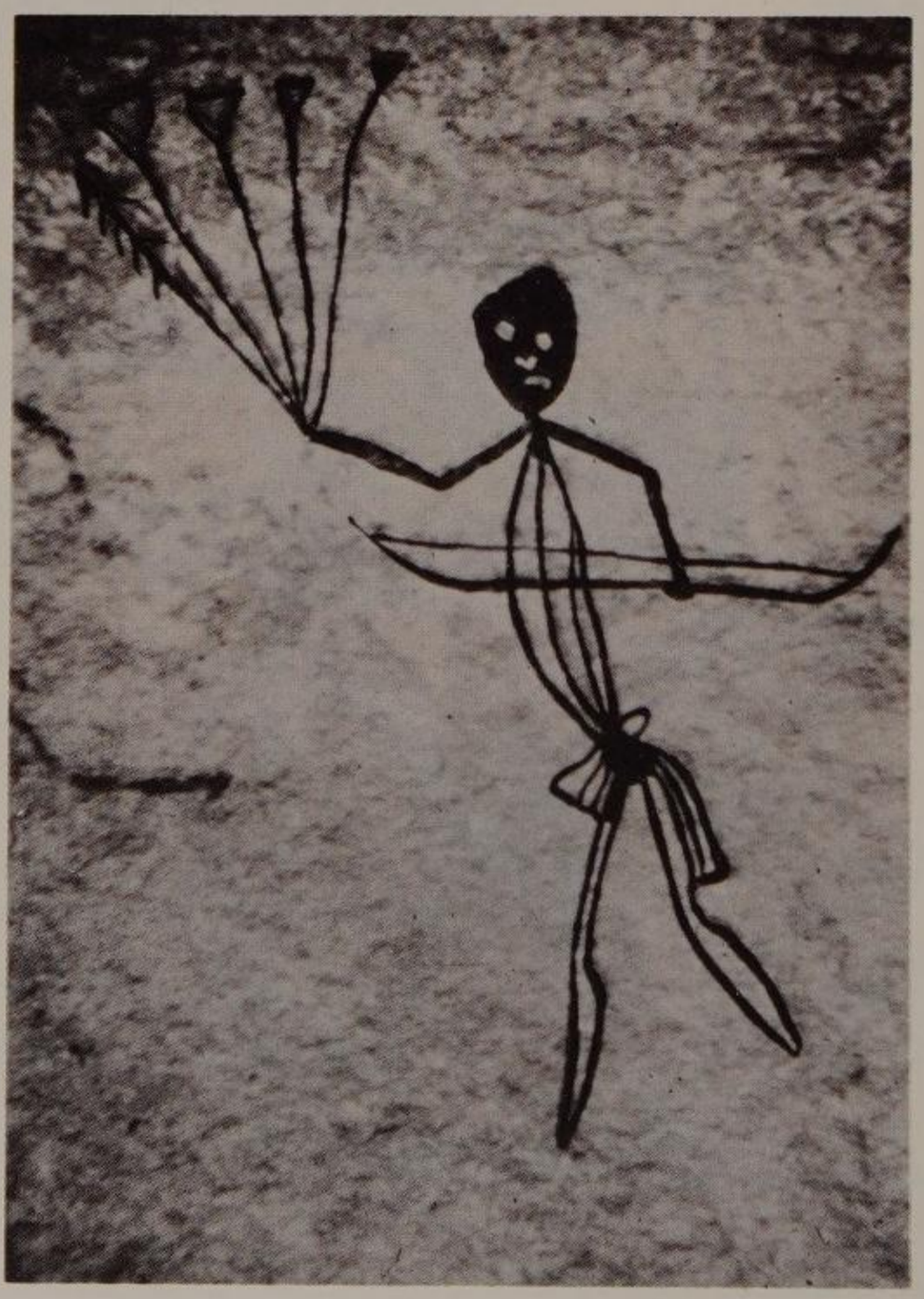
Bola

Illustrations of identifiable Mesolithic weapons appear most clearly in the paintings we have classified under style 5. For this reason we have assigned style 5 to the Mesolithic. That four styles preceded style 5 is well attested by superimpositions. From this it follows that if style 5 began in the Mesolithic, the four styles whose pigments lie successively below it must be earlier. How much earlier cannot be determined by this approach. So we leave it simply that rock painting began in the Mesolithic or earlier. It must be repeated, however, that although the beginning of the Mesolithic has been dated by some Indian archeologists as early as 8000 B.C.E., in the remote parts of India where some of the paintings are found the Mesolithic probably began later and persisted longer.

In the historic periods, the correlation of the subject matter of paintings with known dates becomes somewhat easier. At Shahad Karad, for example, a few miles from Bhopal, there is a painting of a warrior in the costume of the Kushan period, 100–300 C.E. We have assigned this picture, on the basis of its color, subject, and technique, to style 12. Paintings superimposed on this same style in other shelters are later; those painted beneath this style are earlier.

This approach can also be used at Pachmari, where there are many paintings in the white pigment and graceful lines we have called style 16. The arrow tips in many of these paintings are long and very sharp. They probably could be made only of iron. Although iron implements came to northwestern India as early as 1000 B.C.E., their use spread only slowly eastward and southward, especially south of the Narmada River. Pachmari is in one of the least accessible parts of India, high in the Eastern Ghats and south of the Narmada. For this reason, and on the basis of superimpositions at other locations, we have assigned to style 16 a relatively late date: the post-Gupta period, 500–800 C.E.

Finally, at about a score of locations in central India, mostly near known Buddhist, Gupta, and medieval sites, there are engraved or painted inscriptions that can be read, translated, and assigned to the period in which the script in question was widely used. These inscriptions were certainly not made by hunting-and-gathering shelter dwellers, but by intruders during the historic period, probably by Buddhist and Hindu hermits. As can be seen from the table on page 33, most of the inscriptions are short and state only the name of a person. None of the inscriptions we have found superimpose or are superimposed by other paintings. So they have not been of much help in dating other paintings in the same shelters. But there is always a possibility that our successors in this field may have better luck!



Wizard with inverted arrow tips
Style 5
Bhimbetka
Late Mesolithic
About 16 in.
Restored
The inverted arrow tips in this picture are critically important in placing it, and all style 5 pictures, in the Mesolithic period, when these arrow tips were widely used.

A microlith "factory" at Adamgarh, exposed by recent rains, untouched since the Mesolithic period.

D. Excavation.

In many of the central Indian painted shelters excavation of the floors is impossible, because they are solid rock shelves of cliffs, below which the talus slope of rubble dissociates the paintings from any objects which might be found on them. But in other locations, such as Pachmari, Mirzapur, Adamgarh, Raisen, and Bhimbetka, there are good sites for careful digs in accordance with precise archeological techniques. During the past forty years more than twenty excavations have been undertaken in shelters at these places. Fifteen of these have been done by Wakankar and his associates. The excavations range in size from narrow trial trenches to a few broadly horizontal digs encompassing most of the floor of a shelter. The depth of the removable materials above solid rock has ranged from about eighteen inches to about six feet.

Most of these digs have exposed successive layers of soil and debris giving evidence of intermittent human habitation. A few show only one or two periods of occupation. Others have produced a perfect series of stone, bone, baked clay, and metal objects exemplifying every known archeological period. In one of the Bhimbetka digs, the lowest layer, containing pebble tools, was separated from those above it by a layer of breccia, a soft rock formed from windblown dust subjected to pressure. Many millenia must have passed during the time that these crudest of tools were imbedded in the breccia. Although the pebble tools of the Soan industry have not been convincingly dated, pebble tools very similar to those found in the Bhimbetka breccia have been dated in east Africa at about 1,500,000 B.C.E. It is at least possible, therefore, that some of the Indian rock shelters were first occupied by predecessors of *homo sapiens*.

But the most significant result of these excavations is that every one of them produced a quantity of microliths. In some of the digs there was a series of tools leading up to but stopping with the Mesolithic; in others the series began with the Mesolithic and continued to recent times; still others showed the Mesolithic bracketed by one or more periods on either side; and some showed only the Mesolithic. Moreover, microliths are almost invariably found on the surface, exposed by rain, near the painted shelters. As a result of these excavations, then, the association of the early rock-shelter paintings with the Mesolithic is a reasonable hypothesis.

In several excavations this hypothesis received additional support. A dig in a rock shelter at Adamgarh, forty miles south of Bhopal, by R. V. Joshi in 1964 disclosed pieces of hematite in a layer of black soil also con-

One day's findings of microliths from the Mesolithic layer of an excavation at Bhimbetka. Microliths are found wherever there are shelter paintings.

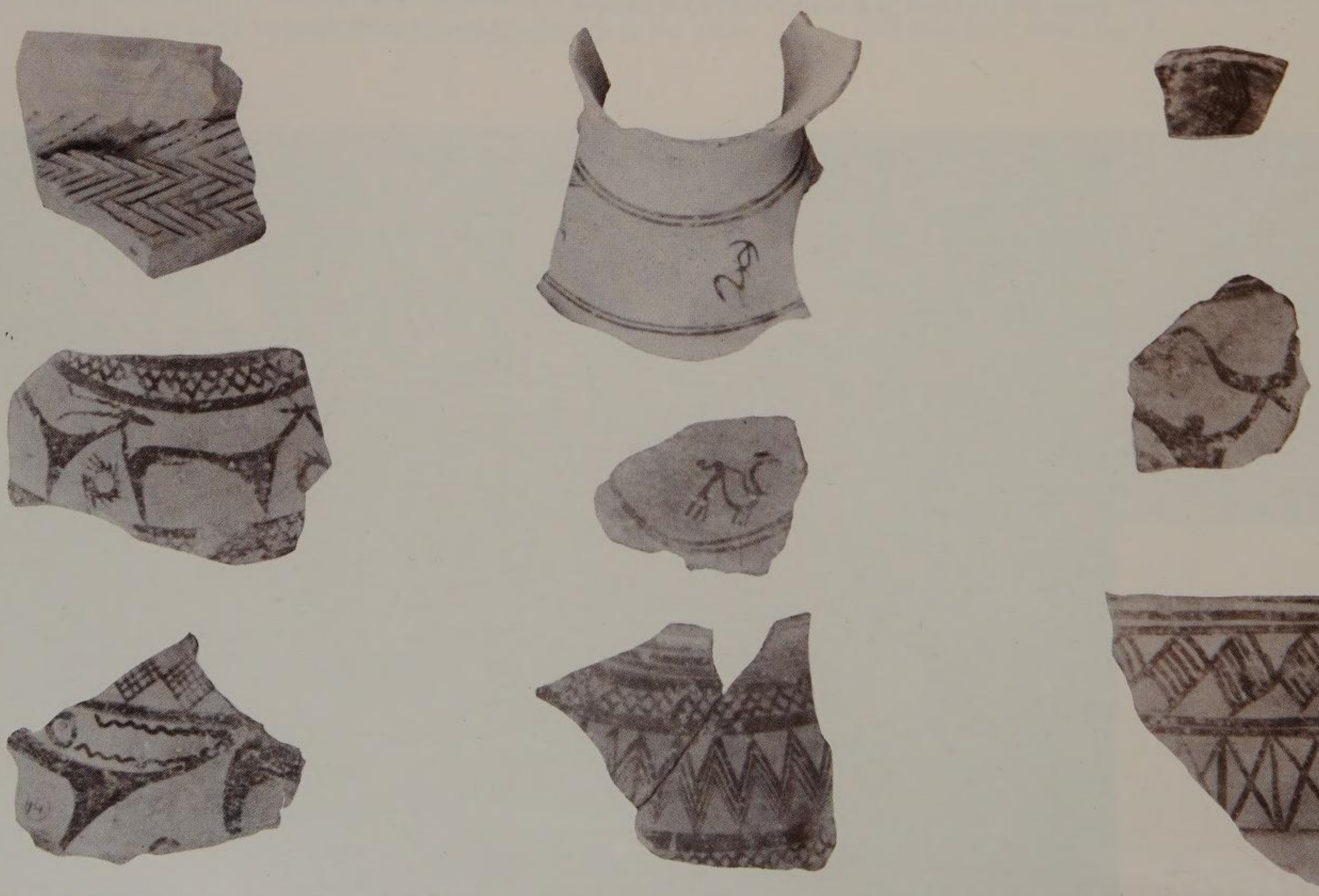
taining a large number of microliths. Hematite is one of the iron oxide pigments frequently used in shelter paintings. Material taken from above the hematite gave a carbon-14 date of c. 5500 B.C.E.

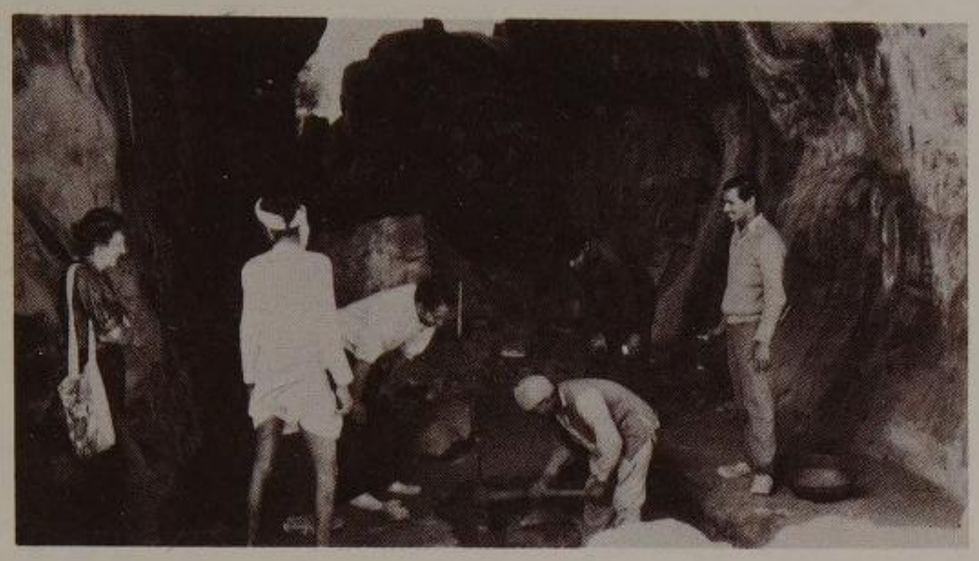
The technique of carbon-14 dating rests on the fact that all forms of life contain an unstable isotope called carbon-14. It is produced by cosmic rays at a known fixed ratio to the total amount of carbon in any living thing. After the death of a plant or animal the creation of carbon-14 stops and the amount then present diminishes by radioactive decay at a known rate. By comparing the known original ratio of carbon-14 to total carbon with the present ratio, and applying the known rate of decay, the period of time from the death of the object to the present can be approximately calculated. This technique is useful for dates back to a limit of 70,000 years with a small percentage margin or error.

Since this method of dating can only be applied to organic materials and since the pigments used in the paintings are all inorganic, the technique, cannot be directly applied to the pigments. However, some of the successive layers disclosed by excavation contain carboniferous material, which can be dated. If there can be found, in a layer dated in this manner, a fragment of pigment, or a pigment-grinding stone, or a preliminary sketch matching the painting on the wall or ceiling above, the date of the painting can be inferred from the date of the layer in which the evidence was found. That the carbon found in the Adamgarh dig, dated at about 5500 B.C.E. was taken from above the hematite pigment suggests that the fragment of pigment was used and dropped somewhat earlier.

In an excavation by Wakankar and Trivedi at Modi in 1959, a heap of hematite grains and a painted stone were found in a layer just above one containing Middle and Late Paleolithic tools, and below layers containing Mesolithic microliths. The color of the powder grains matched that of the painted stone and also the color of the earlier of two superimposed paintings on the wall of the shelter above the excavation. Here, again, the inference is strong that the date of the earlier painting is early in

Shards of Chalcolithic Pottery Found in Painted Shelters





Trial trench at Auditorium Rock, Bhimbetka, 1972. Lower Paleolithic pebble tools were found imbedded in breccia in the bottom layers.

the Mesolithic, or earlier.

In three of the eleven excavations by Wakankar and his associates at Bhimbetka between 1971 and 1975, pigment stones of red hematite, yellow ochre and blue black manganese were found in both Mesolithic and Chalcolithic layers. This strenghtens the inference that rock paintings occurred in the Mesolithic, with possible dates of 8000 to 5000 B.C.E. Even more impressive, however, was the discovery in Bhimbetka shelter III-A-28 of green pigments in the Upper Paleolithic layer. Green pigments have not been found in any more recent layer. There are at least ten painted shelters at Bhimbetka in which green paintings are superimposed by paintings which we have classified as Mesolithic. The inference that the green paintings are pre-Mesolithic and contemporary with Upper Paleolithic tools is therefore inescapable. It is not possible, however, to assign calendar dates to these paintings since carbon-14 dates have not been determined.

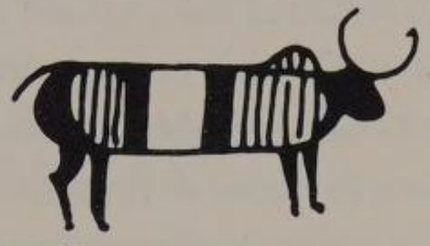
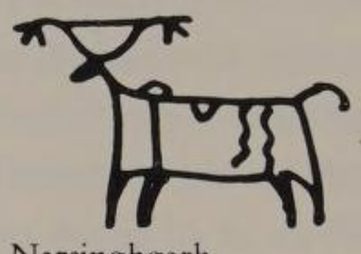
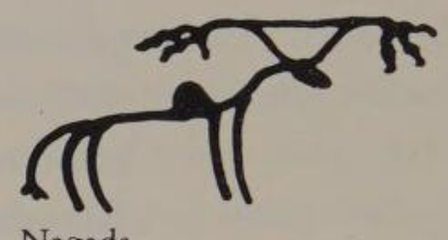
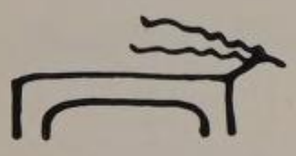
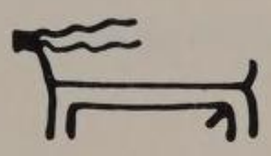
Excavation in the upper layers of painted shelters and at a great many other places in India has produced broken pieces of pottery. So many of these have been found and studied during the past fifty years that, on the basis of material, color, texture, technique of manufacture, glazing, decoration, and provenance, they can definitely be associated with specific periods of prehistory extending from several centuries before the Indus Valley civilization to the beginning of historic records.

There are many locations in north and central India where pottery with decorative designs very similar to rock-shelter paintings has been found. The approximate dates of these specimens of pottery have been well established. Although it is possible that the shelter dwellers copied their pictures from pottery designs, there

Periods and Styles			
	Period ?	Upper Paleolithic ? The Green Drawings	
	Period I	Mesolithic or Earlier Styles 1–6	8000 (?)–2500 B.C.E.
	Period II	Neolithic/Chalcolithic and Early Iron	2500–300 B.C.E.
	Period III	Early Historic	
		(a) Mauryan and Shunga Style 11	300 B.C.E.–100 C.E.
		(b) Kushan Styles 12 and 13	100–300 C.E.
		(c) Gupta Styles 14 and 15	300–500 C.E.
		(d) Post-Gupta Style 16	500–800 C.E.
	Period IV	Medieval Styles 17 and 18	800–1300 C.E.
	Period V	Recent Styles 19 and 20	1300 C.E.–Present

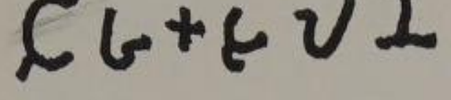
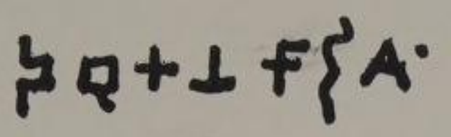
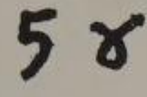
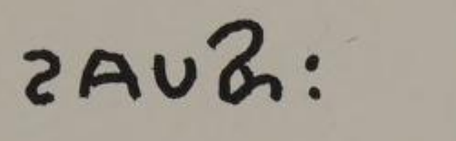
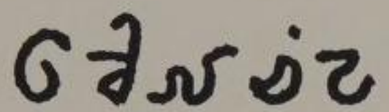
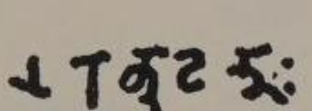
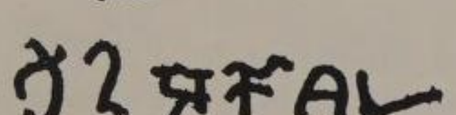
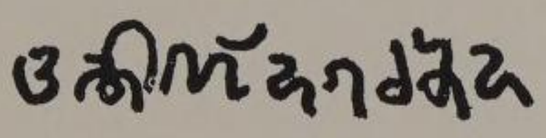
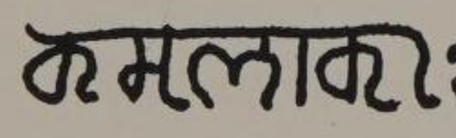
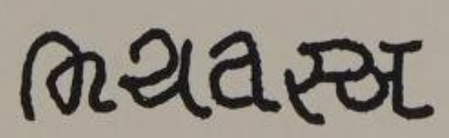
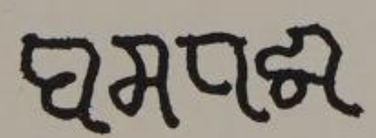
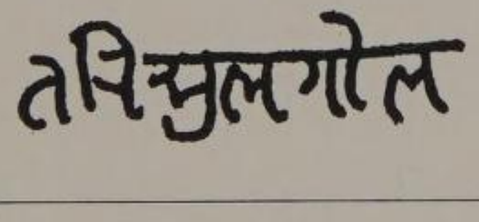
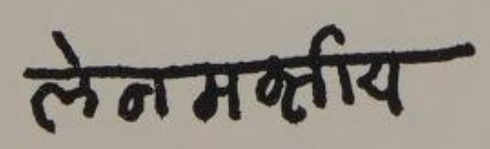
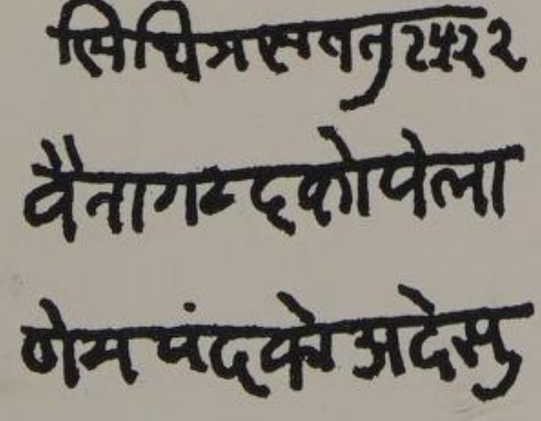
Comparison of Shelter Paintings with Chalcolithic Pottery

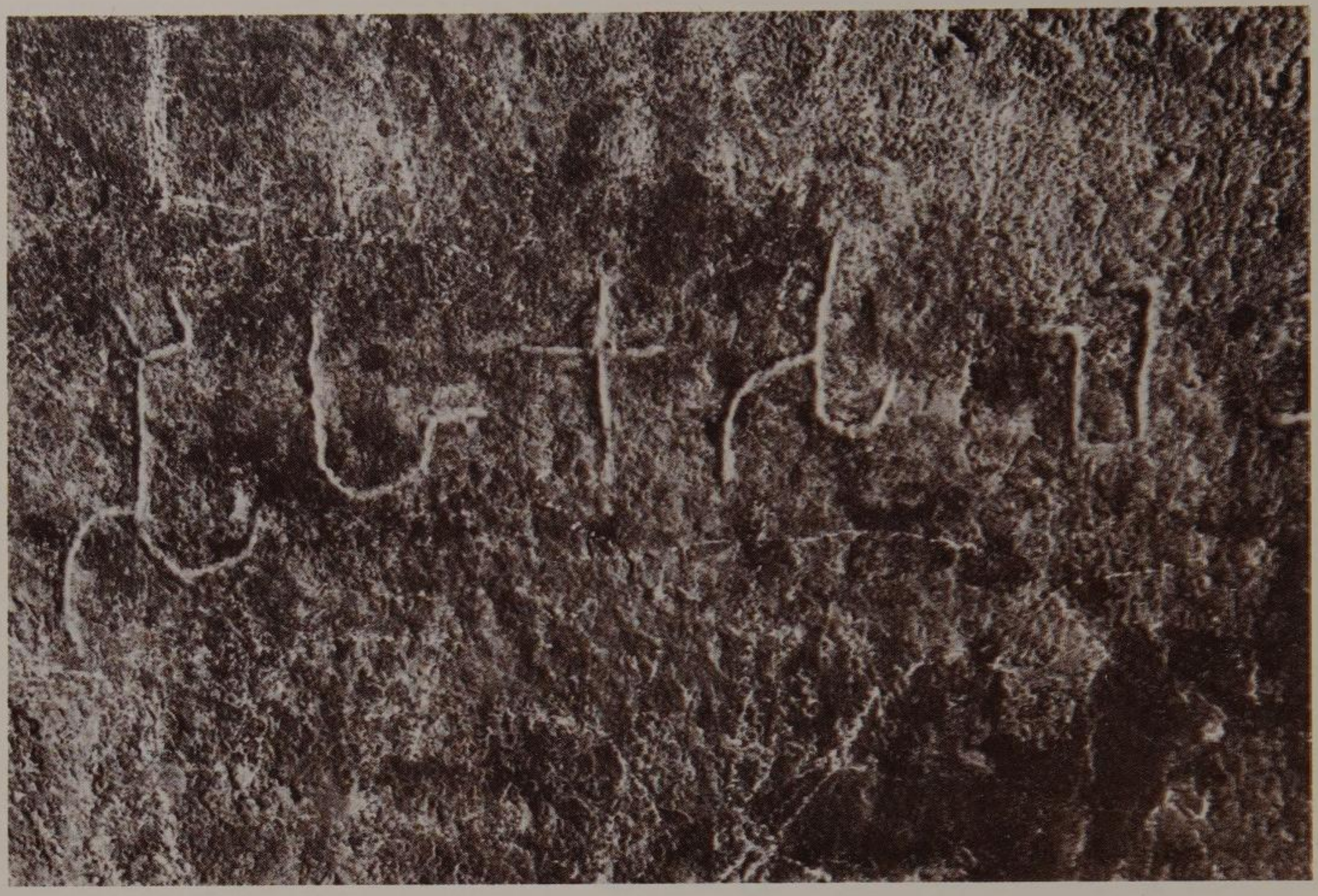
Similarities between shelter paintings and pottery decoration suggest that the paintings were made before the known dates of the pottery.
Drawings by VSW

Rock Painting	*Pottery*	*Rock Painting*	*Pottery*
Bhimbetka	Kulli	Gwalior	Kayatha
Modi	 Kulli	Kharwai	Navadatodi
Modi	Nagada	 Narsinghgarh	 Nagada
Kharwai	Harappa	Putlikarar	Kayatha
 Gwalior	 Navadatodi	Modi	Harappa
Kharwai	Mahatpur		
Bhimbetka	Nagada	Kharwai	Harappa
Bhimbetka	Nagada	Bhimbetka	Navadatodi
Raisen	Lothal	Bhimbetka	Kalibangan

Some Inscriptions Found in Rock Shelters

In several shelters, especially those near known Buddhist, Gupta, and medieval sites, there are painted or engraved graffiti, usually of a name. Drawings by VSW

Period	*Place*	*Original*	*Transcription*	*In English*
300–100 B.C.E.				
Brahmi Script	Bhimbetka		sihaksa lene	cave of Sihaka
	Tikla		dambuken karitam	done by Dambuka
	Adamgarh		dham	(place)
300–900 C.E.				
Gupta and Post-Gupta Script	Sita		desapata	owner of the land
	Dharampuri		vichel chanda	(name of a person)
	Bhimbetka		pisach	(name of a person)
	Bijayapur		narendra	(name of a person)
	Bijayapur		prakash	(name of a person)
	Pachmari		utkirna dagavaken	excavated by Dagavekena
1000–1400 C.E.				
Early Nagari Script	Kharvai		Kamalakar	(name of a person)
	Bhimbetka		kesavasya	belongs to Keshava
	Kharvai		dhama padha	(name of a person)
	Bhimbetka		tarisul gota	of Trident clan
1500–1600 C.E.				
Late Nagari Script	Pachmari		lenam siya	(name of a person)
	Tekkalkota		sidhitra sabatu 1522 varagachanda-kovela khetrachanda-koadessu	in the auspicious year 1522 ordered by Khetrachanda son of Varagachanda



Brahmi script: Sihaksa Lene (cave of Sihaka)

are two reasons for believing that the reverse process is more likely. First, the pottery designs are, in general, more abstract and conventionalized than the shelter paintings. Second, the movement of people was from the hunting-and-gathering culture of the rock shelters toward the settled agriculture of the floodplains and arable plateaus. To the extent that there are parallels between the two art forms it seems likely that shelter painting was the earlier of the two.

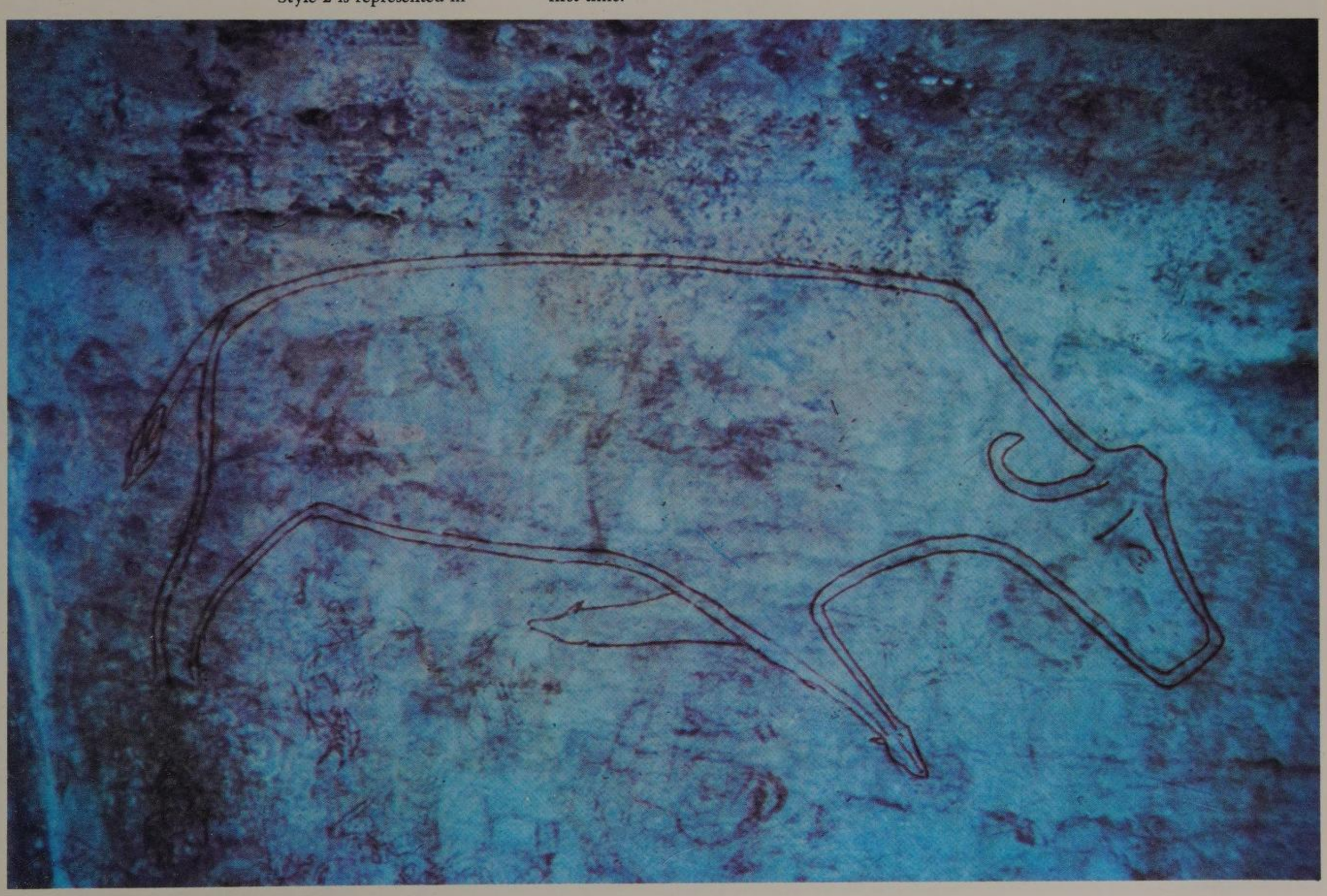
As a result of using all these approaches, we present the table of styles, periods, and dates on page 31, which may be accepted as at least an invitation to other scholars to improve upon it. The most controversial point in this table is the beginning. We believe that by suggesting the early Mesolithic for some locations we are being conservative, for two reasons. First, on the basis of superimpositions, four styles, precede style 5, which seems quite securely anchored in the Mesolithic. Second, the green drawings, to which we have not assigned a style number, appear to be associated with the Upper Paleolithic. Our hesitation in being more definite about their date is based upon the fact that these green paintings are exclusively of people. But the paintings in our styles 1 and 2 are exclusively of animals; humans do not appear until styles 3 and 4, and then only in company with animals. How can these apparently earlier human stick figures without animals be explained? The logical hypothesis is that a late Paleolithic culture in central India was completely superseded by a Mesolithic culture entirely unaffected by the artistic tradition of the preceding painters. But the evidence for this is still so scant that we leave the green drawings ouside our formal system of numbered periods and styles.

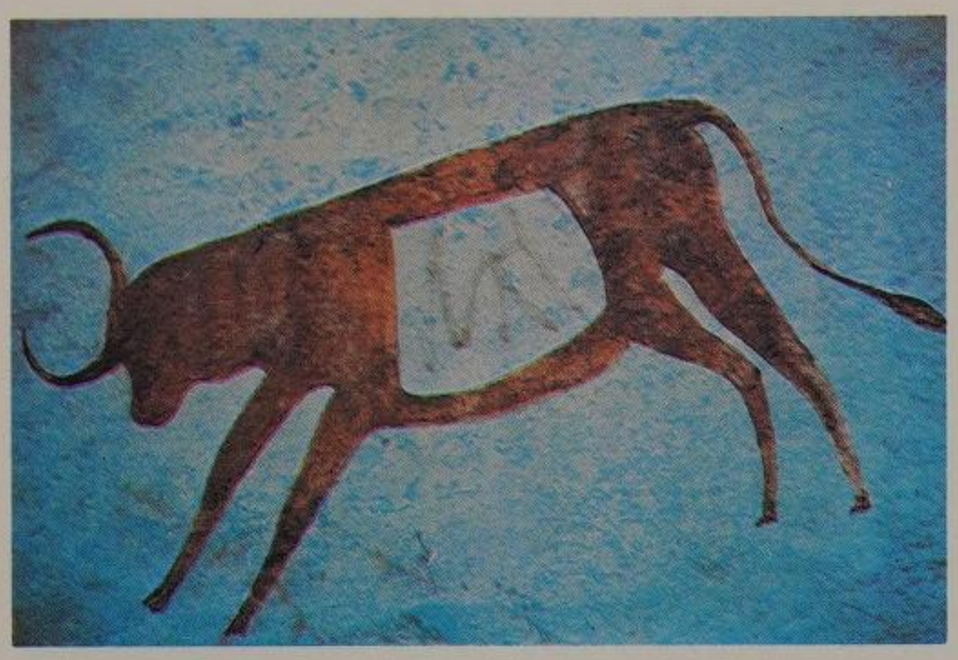
Typical illustrations of each style are arranged, as nearly as possible in chronological order, in the freehand painted style chart on page 10. Their probable periods and dates are summarized below. A description of these twenty styles, with examples of their subjects and locations, is provided in Appendix 2.

As indicated in the captions of pictures, most of the original photographs of rock paintings have been "reconstructed" by a method that does not change the outline of the original picture or the rock background. It has the effect of restoring the filling of the outline of the painting to its original clarity and brilliance. This method I developed is illustrated on page 9 and explained in detail in Appendix 6.

Elephant.
Style 1
Adamgarh
Early Mesolithic or earlier
48 in. long
Restored
Style 1 is represented in four locations, by very faint elephants and a bison bull painted in red, brown, or black wash with no outline. No humans appear.

Buffalo
Style 2
Adamgarh
Early Mesolithic or earlier
8 ft. long
Restored
Style 2 is represented in three locations, by bison, buffalo, or elephants painted in (now) very faint double or single outline with no in-filling, 14 inches to 8 feet long. Humans appear for the first time.



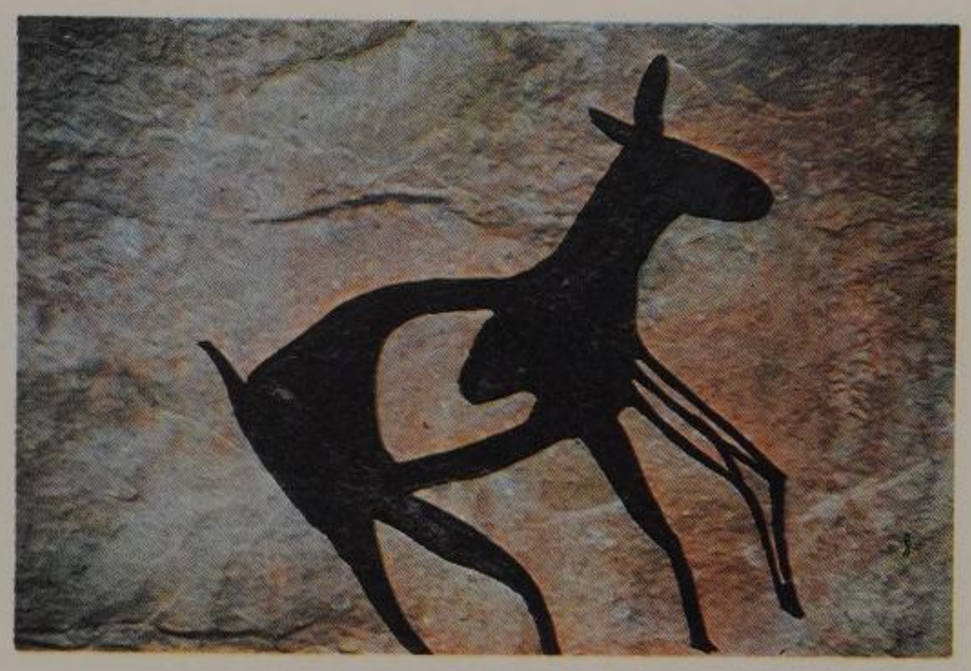


Bison
Style 3
Adamgarh
Mesolithic
About 14 in.
Restored
The artist may have cleaned his brush in the hollow center.

Deer with bison horns
Style 3
Adamgarh
Mesolithic
About 14 in.
Restored
Style 3 is represented in four locations, by bison, elephant, rhino, and antelope painted with a wide wash outline and hollow center occasionally broken by wide bands.

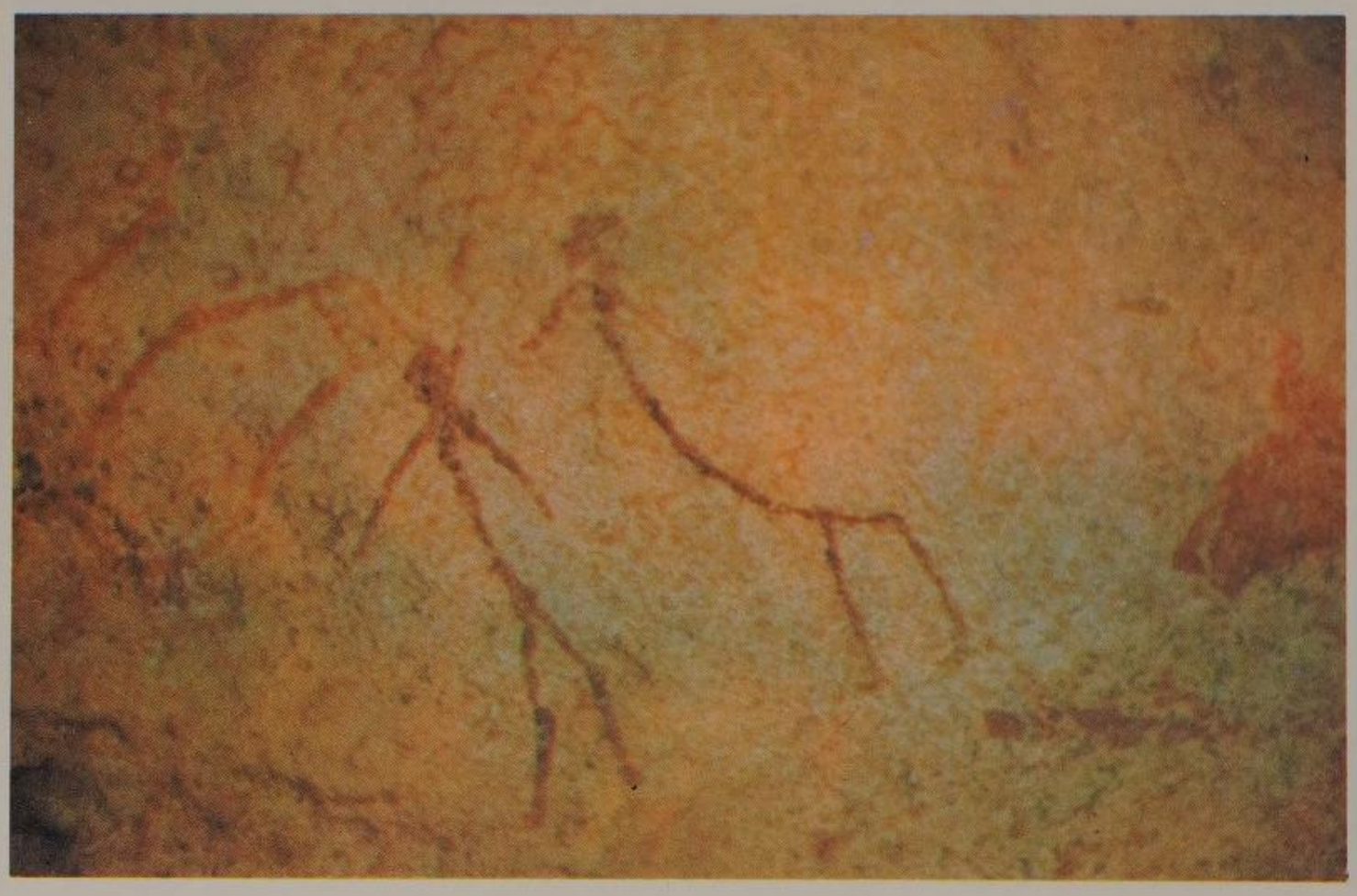
Elephant and humans ▶
Style 3
Kharvai
Mesolithic
About 10 in. long
Restored

Nilgai (an antelope)
Styles 3–4
Adamgarh
About 12 in. long
Restored
This very faint painting appears to be transitional between styles 3 and 4, since the left foreleg shows its musculature.



Black buck (an antelope)
Style 4
Bhopal
Mesolithic
About 12 in.
Restored

Style 4 is represented in eight locations, by bison and antelope, with occasional humans, painted in red outline and infilled with lines showing the musculature and internal organs. In this example a resemblance may be noted to the "X-ray" style of northern Europe, although the Indian style probably evolved locally.



Stick figure humans
Style 4
Bhopal
Mesolithic
About 8 in. high
Unrestored photo

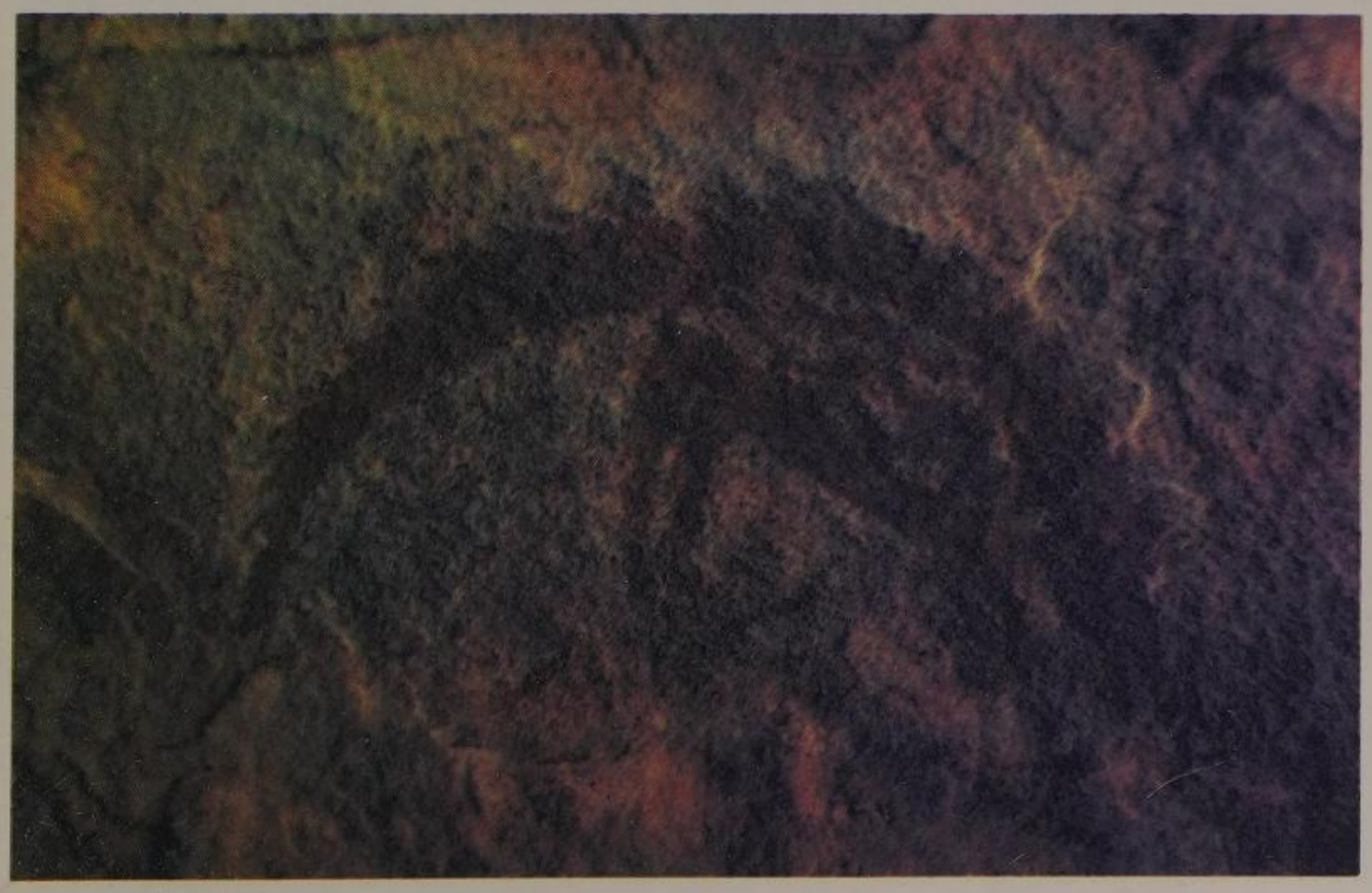
These timorous humans appear to be creeping toward the antelope whose muzzle appears at the right.

Leaping mongoose
Style 5
Raisen
Late Mesolithic
About 4 in.
Unrestored photo

This tiny painting, probably done with a split porcupine quill, shows a mongoose exactly as it looks when leaping aside to avoid the strike of a cobra.

Barasingha (a deer)
Style 5
Raisen
Late Mesolithic
About 10 in. long
Unrestored photo
A few paintings from a multitude in the richly decorated shelter known locally as Hathi Tol.

Style 5 is widely and prolifically represented in twenty-four locations by a great variety of animals and occasional humans painted in red, red and white, or white outline, infilled with many different abstract geometric designs.



Rhinoceros
Style 5
Raisen
Late Mesolithic
About 8 in. long
Unrestored photo

Black buck (an antelope)
Style 5
Bhopal
Late Mesolithic
About 8 in.
Restored

Curvilinear abstract bison
Style 5
Bhimbetka
Late Mesolithic
About 36 in.
Restored

Geometric abstract bison
Style 5
Bhimbetka
Late Mesolithic
About 36 in.
Restored

Langur monkeys
Style 7
Shahad Karad
Neolithic/Chalcolithic
Restored

Leaping doe
Style 7
Bhimbetka
Neolithic/Chalcolithic
10 in.
Restored
Style 7 is widely represented in seven locations by many animals and human hunters painted in red or brown wash without outline.

Waterbirds
Style 7
Bhaldaria shelter,
Mirzapur District
Neolithic/Chalcolithic
About 2 ft.
The birds can be identified, from left to right, as a snipe, a stilt, a spoonbill, and a stork.

Detail of the picture below showing the crablike creature toward which the mouse-headed man is fleeing. On closer examination, details too faint to be seen in the photograph of the larger area became apparent. The same motif is repeated in other paintings at Bhimbetka.

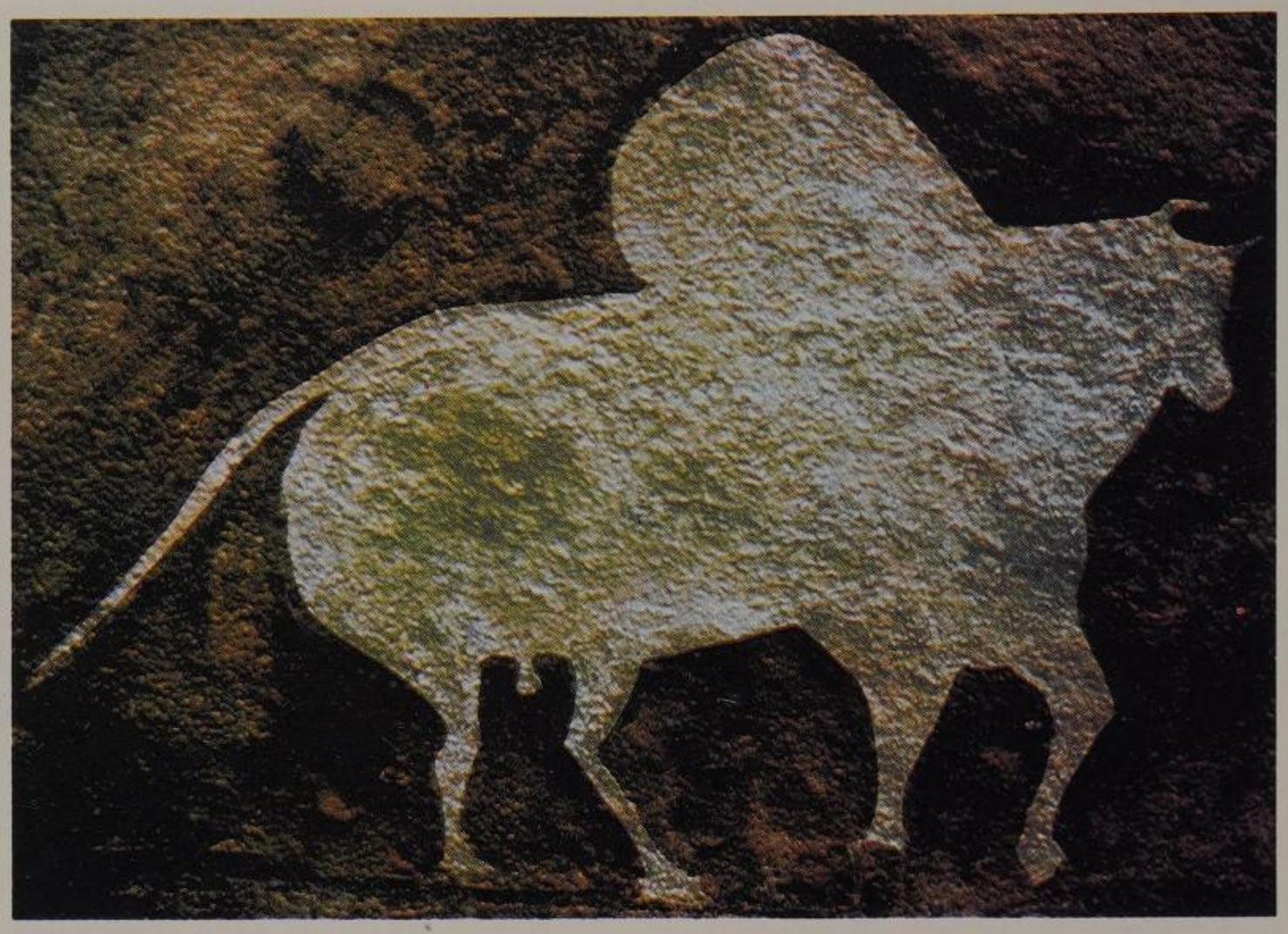
Terrible bison
Style 7
Bhimbetka
Neolithic/Chalcolithic
About 30 in.
Restored

A tiny human wearing a mouse-head mask flees in terror from a gigantic bison, while two other humans abjectly watch.

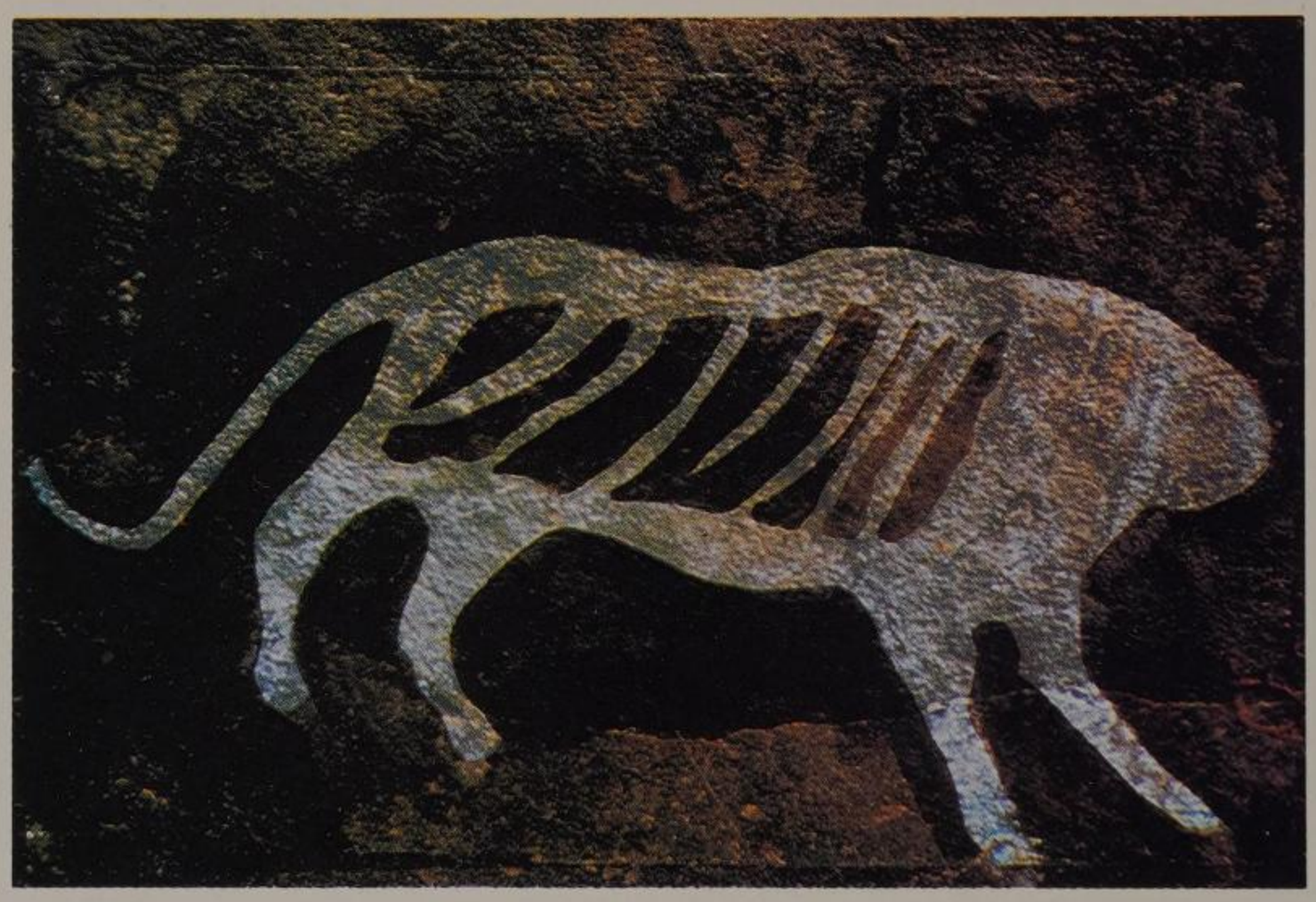
Spotted deer
Style 9
Kharvai
Neolithic/Chalcolithic
Unrestored photo

Cheeta
Style 9
Kharvai
Neolithic/Chalcolithic
About 10 in.
Style 9 is represented in six locations by animals and humans painted in white or pale yellow with a thick crude outline and abstract in-filling. Most of the examples appear to have been done with a finger dipped in pigment. The wild cheeta has been extinct in India for centuries, although it was imported and trained for hunting until recently.

Zebu bull
Style 10
Kharvai
Neolithic/Chalcolithic
About 10 in.
Restored
Style 10 is represented in five locations, by bulls, tigers, and humans painted in white or pale yellow wash with no outline. Many paintings are graceful and quite realistic.



Tiger
Style 10
Kharvai
Neolithic/Chalcolithic
About 10 in.
Restored



Bison bull
Style 10
Bhimbetka
Neolithic/Chalcolithic
16 in.
Restored

◄ Kushan Warrior
Style 12
Shahad Karad
Early Historic period
About 15 in.
Restored
Style 12 is represented in six locations by animals, hunters and warriors painted in dark red wash or heavy outline with geometric in-filling. Found only near Neolithic pottery shards. The bow of the warrior is grotesquely exaggerated and may reflect the attitude of the shelter dwellers toward the invading soldiers.

Swastika with spirals
Style 11
Kharvai
Early Historic period
About 16 in.
Restored

Symbolic or decorative design
Style 11
Kharvai
Early Historic period
About 20 in.
Restored

Cavalry and infantry battle
Style 13
Bhimbetka
Early Historic period
About 24 in.
Restored

Style 13 is profusely represented in ten locations by horses, elephants, and soldiers in battle, painted in thin red or white outline. As in style 12, the pictures probably present a hillman's-eye view of valley conflicts.

Mounted warrior and jungle cock
Style 13
Bhimbetka
Early Historic period
About 20 in.
Restored

In this and many other pictures in style 13, the bolalike weapon of the horsemen, previously unknown to archeologists, clearly appears. The jungle cock, the small predecessor of all domestic fowl, is drawn almost equal in size to the horse.

White horse and flower pot
Style 14
Bhimbetka
Early Historic period
About 18 in.
Restored
This style is usually associated with Gupta or Shanka script, which suggests the presence of religious recluses from valley cultures.

Male and female vultures
Style 16
Pachmari
Historic period
Restored
The female, in a posture of sexual submission, is scorned by the male, drying his wings.

The honey-hunters foiled
Style 16
Pachmari
Historic period
About 14 in.
Restored
Three men in a tree were trying to gather honey from a hive of wild bees. The bees attacked. Two men are helping one to escape from one branch to another.

Harpist and family
Style 16
Pachmari
Historic period, post-Gupta
About 18 in.
Restored

This style is profusely represented at Pachmari and Bhimbetka by very realistic scenes of domestic life, hunting, and tribal conflict.

Boxers
Style 18
Bhimbetka
Medieval
Restored
Style 18 is sparsely represented at Bhimbetka and Kharvai by very fresh wash or heavily outlined paintings in red, or red and white.

Red Elephant
Style 18
Bhimbetka
Medieval
About 14 in.
Restored

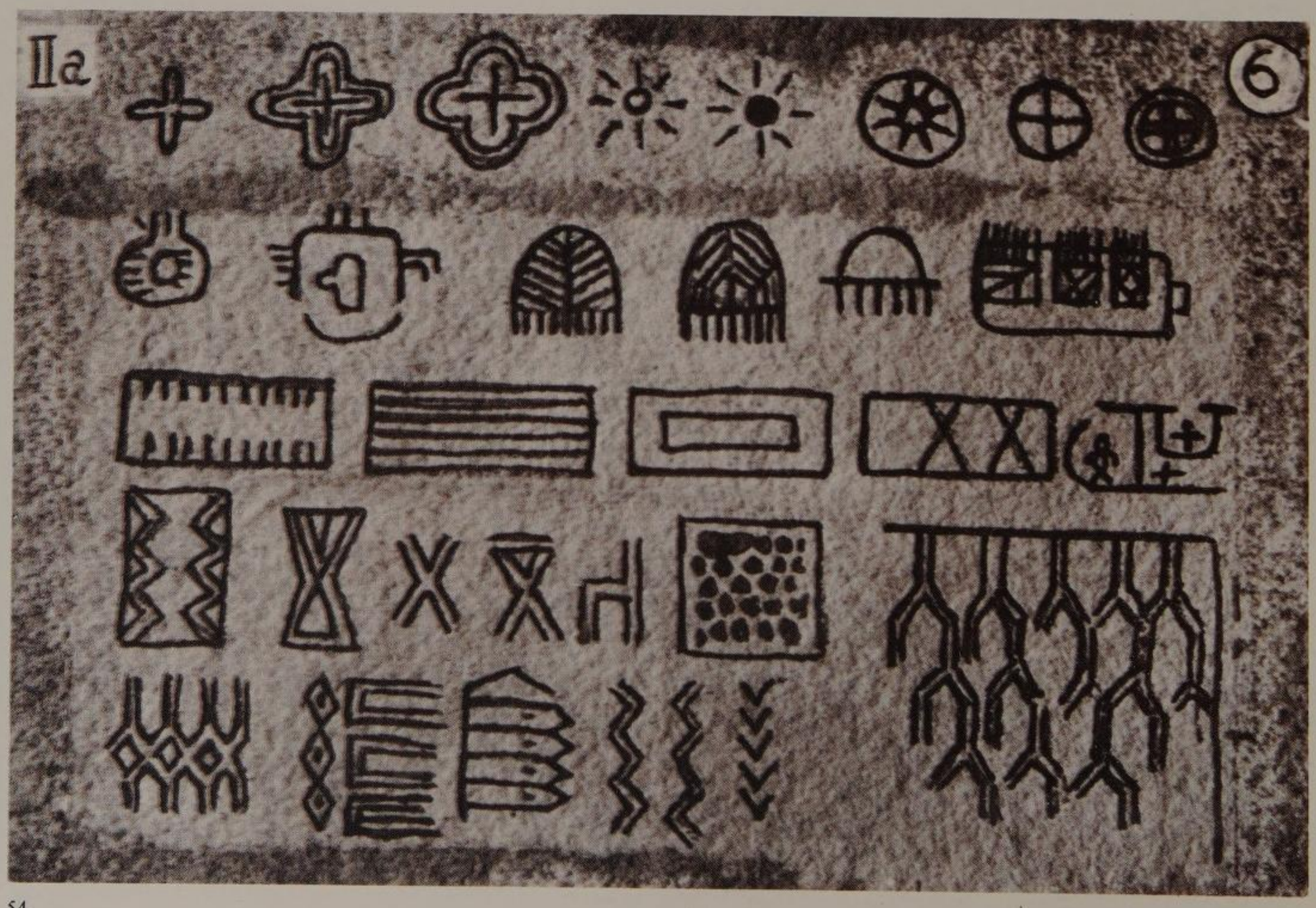
Human stick figures
Bhimbetka
Probably Upper Paleolithic
About 14 in.
Significance unknown.
At left is the restored picture; below is the unrestored photo, showing more clearly the Mesolithic paintings superimposed on the green figures.

Barasingha (a deer)
Style 5
Raisen
Late Mesolithic
About 10 in. long
Unrestored photo
Detail of picture on p. 39.

Bison
Style 5
Narsinghgarh
Late Mesolithic
About 10 in.
Unrestored photo

Elephant
Style 5
Raisen
Late Mesolithic
About 12 in.
Restored

Geometric and floral designs
Style 6; associated with
the animals of style 3 and
the humans of styles 4 and 5
Found in ten locations
Although some of the
paintings may be purely
decorative, probably most
of them are symbolic—of,
e.g., huts, traps, the sun, or
water.
Mesolithic period
Summary of style painted
by VSW



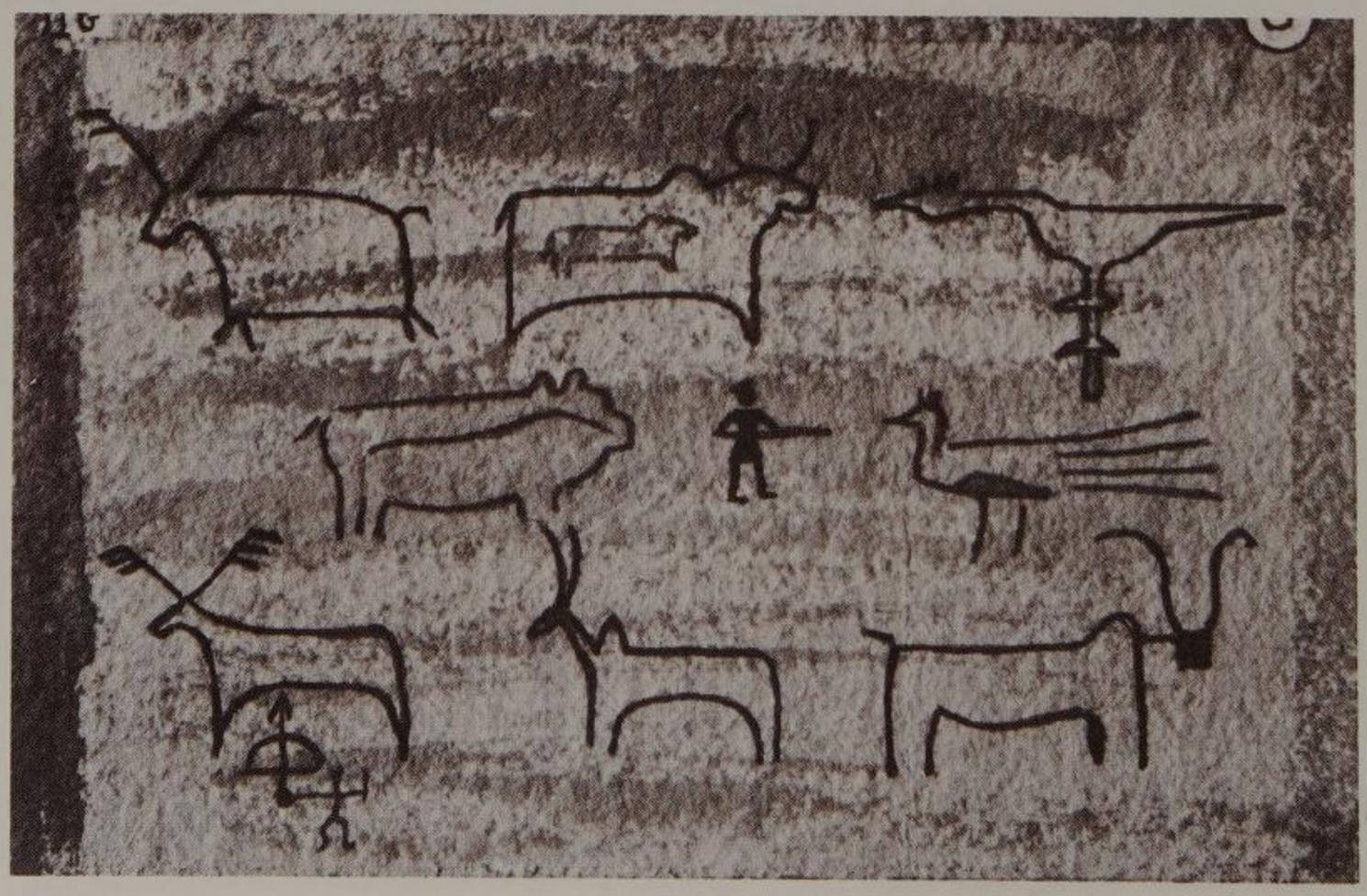
Wild buffalo
Style 7
Bhimbetka
Neolithic/Chalcolithic
About 24 in.
Restored

The horns of this species sometimes measure 8 feet from tip to tip around the curve.

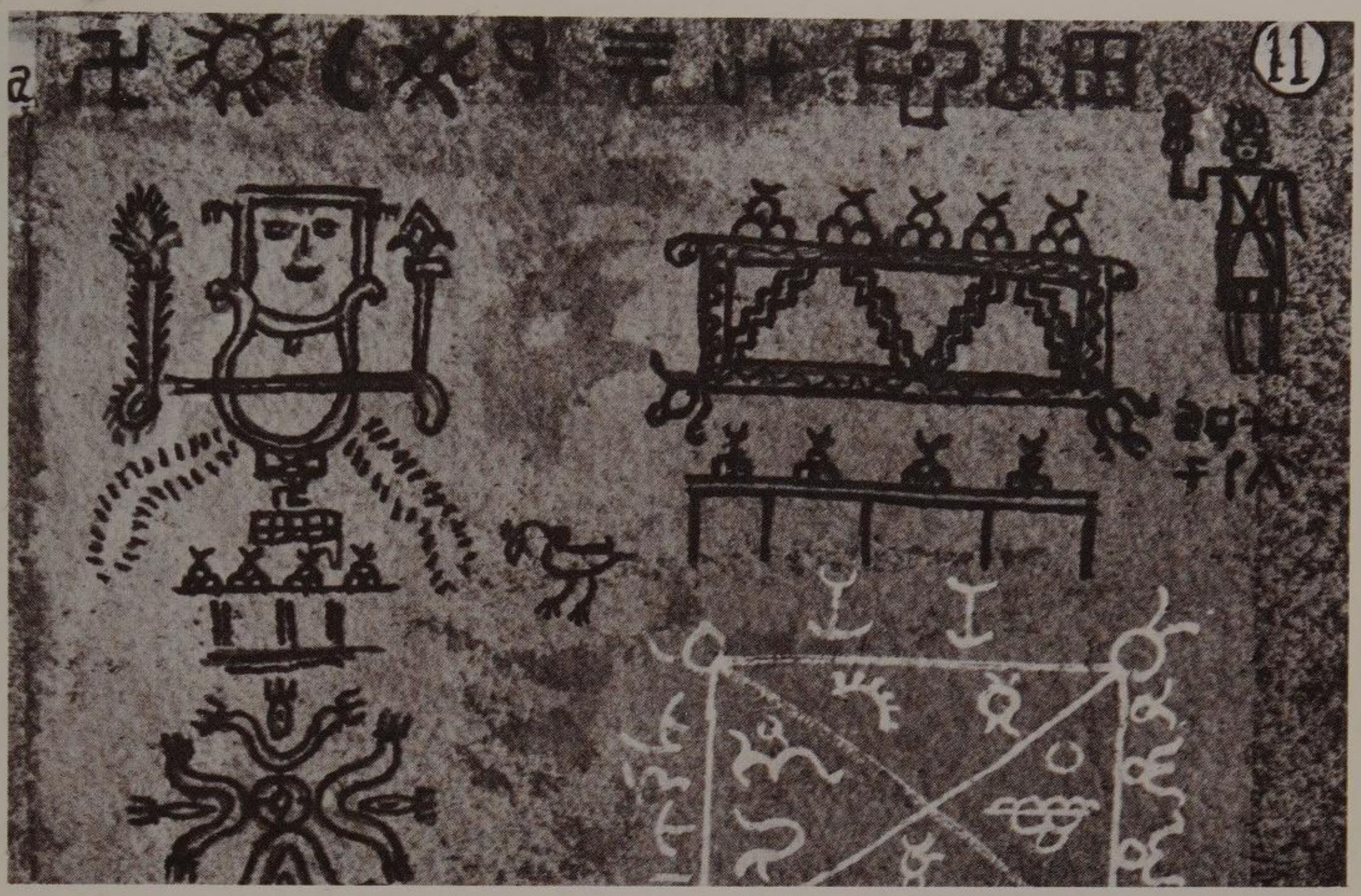
Female and unfinished figure
Style 7
Bhimbetka
Neolithic/Chalcolithic
About 10 in. tall
Restored
In Indian rock-shelter painting there are very few clearly female figures.

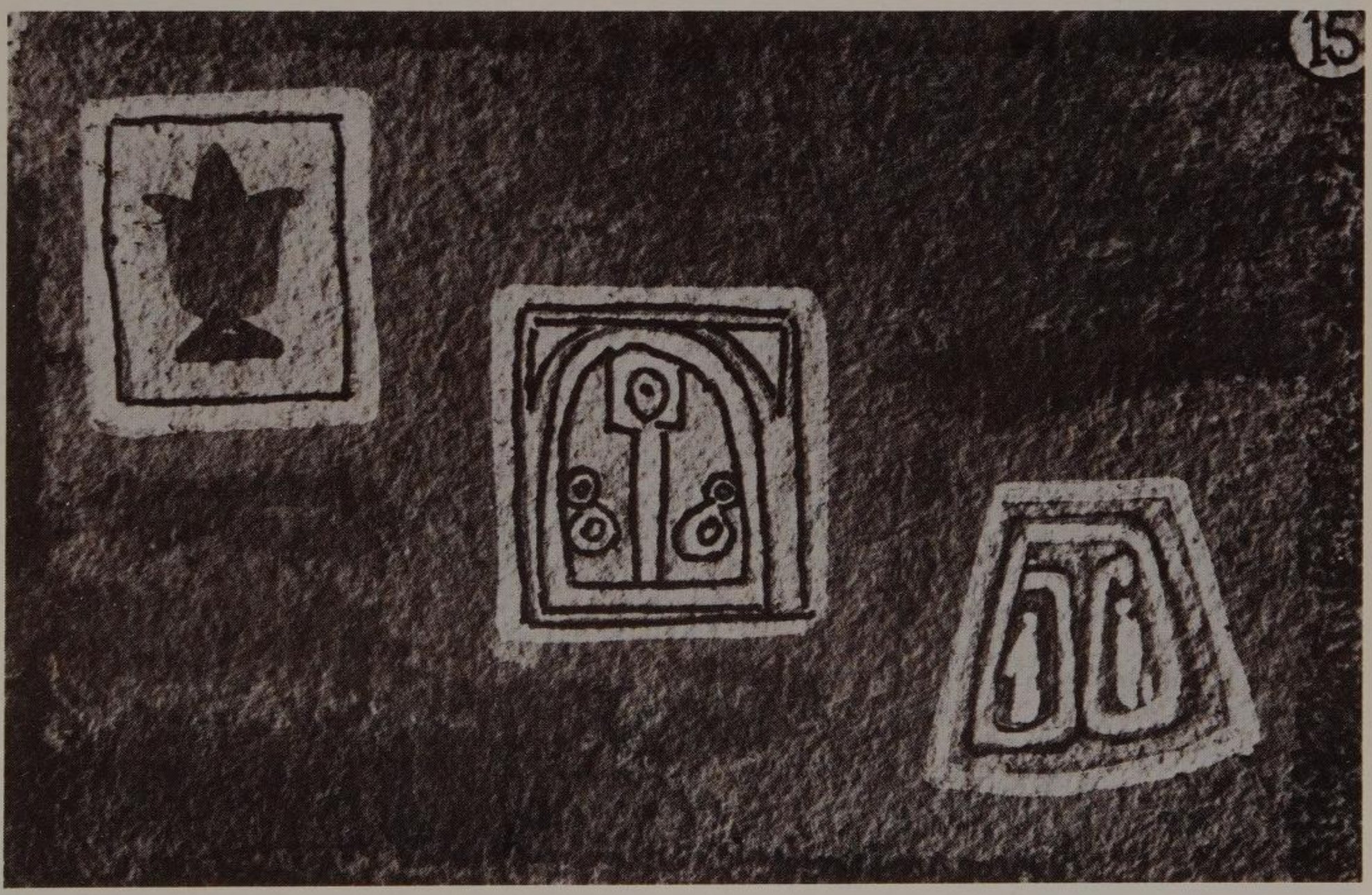
Peacocks
Style 8
Sujanpura
Neolithic/Chalcolithic
Freehand watercolor copy
by VSW.

Style 8 is represented in ten locations by animals, birds, and humans painted in simple stylized red outline with no in-filling.
Neolithic/Chalcolithic
Summary of style painted by VSW.



Style 11 is represented in six locations by many different symbols painted in red or white outline. Near the symbols there are often inscriptions in Brahmi script, but these give no clue to the meaning of the symbols.
Early Historic period
Summary of style by VSW





Style 15
Early Historic period
Summary by VSW
This style is represented in three locations by polychrome decorative patterns.

Water carrier
Style 16
Pachmari
Historic period
About 12 in.
Restored

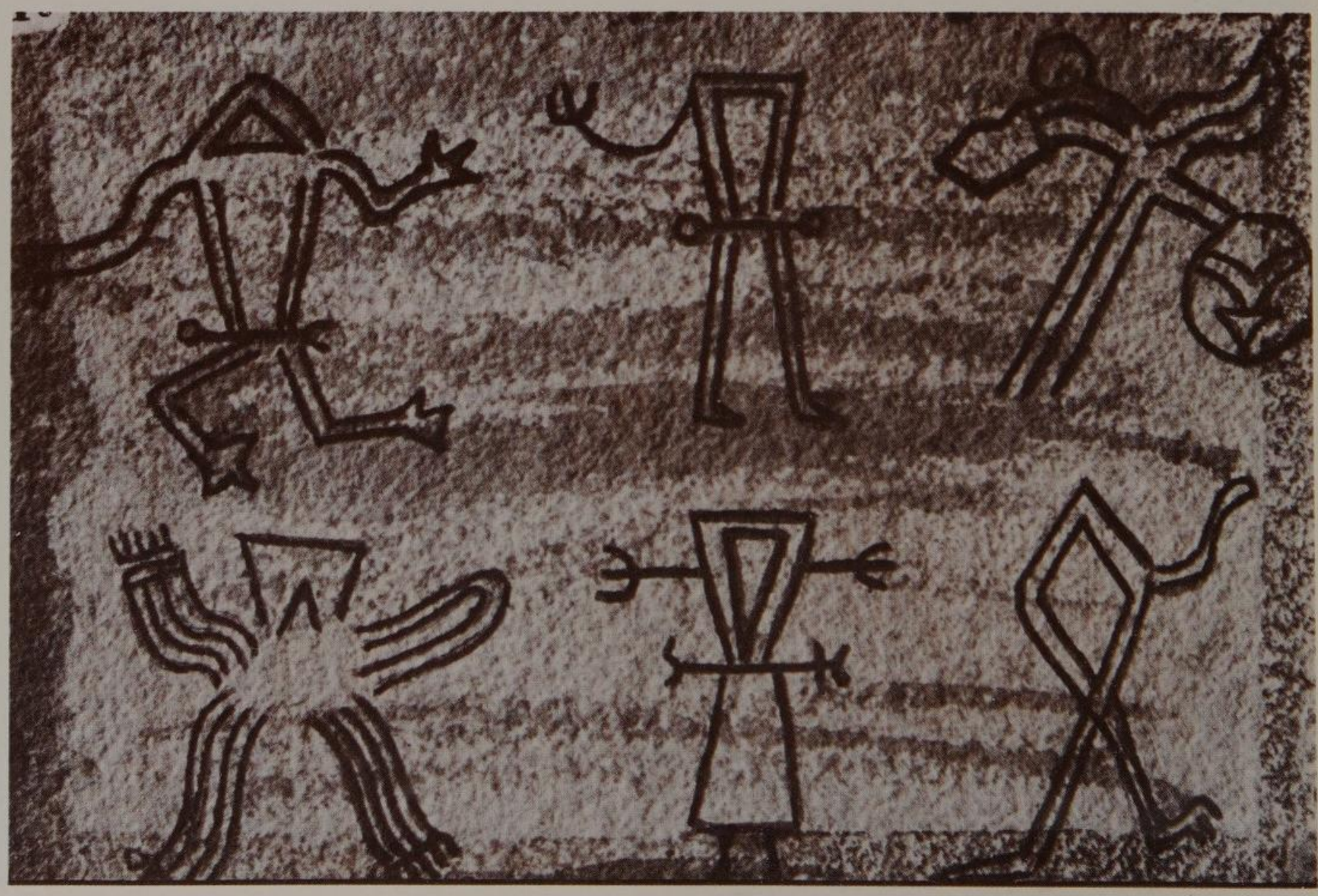
Tree ▶
Style 17
Kharvai
Medieval
Unrestored photo
This painting probably resulted from the occupation of the shelter by a Buddhist hermit for whom the tree was a sacred object.

A broken promise?
Style 16
Pachmari
Historic period
About 14 in.
Restored

The male figure at the right seems to be rejecting the importunities of the smaller female figure.

Style 19 is very sparsely represented at three locations by swordsmen, camels, and horsemen done in faint red or black crayon outlines. Summary, drawn by VSW

Style 20 is represented only at Sita Khardi by geometrically abstract figures of humans painted in red double outline. Recent period Summary, drawn by VSW



4

Why Did They Paint?

We cannot know with any degree of certainty why Stone Age people painted the walls of their shelters. But we can *infer* from two sets of data: One is the subject matter and nature of the paintings; the other is the findings of anthropologists who have actually observed, within the past fifty years, the painting rituals of people in Africa, Southeast Asia, and Australia whose culture, until very recently, was closely comparable to that of late Paleolithic times.

The speculative nature of any effort to answer this question has not deterred previous students from writing many pages in attempts to answer it. From Abbé Henri Breul, the doyen of rock-painting archeology, who tended to emphasize religious motives, to Alexander Marshack, who has focused on calendar devices, the question has produced a variety of answers: religion, magic, shamanism, totemism, sexual significance, fertility rites, communication, ceremonial symbols, calendrical devices, decoration, and doodling.

The kind of answer given has depended in part on the particular paintings seen. Since the nature of the paintings varies from one part of the world to another, it is not surprising that different students have reached different conclusions. The number and variety of the rock paintings of Central India is so great, and they were created over so long a span of time, that the answers for India are almost certain to be eclectic.

We find it helpful to divide the question into two parts: First, why did early man paint? And second, why did their contemporary cultures support their efforts?

It is now apparent, as a result of the findings of the last eighty years, that painting, engraving, or carving on stone, bark, wood, or bone have been as widely practiced on every habitable continent as almost any other form of human activity. It seems to us reasonable to assume that the need for creativity, or art for art's sake, has been a part of the genetic makeup of some individuals in all cultures. The bare idea of painting, or of other art forms, may have been diffused from one part of the world to another. But the early adoption of the idea, all over the world, depended upon the presence of individuals whose creative drives made them responsive.

But why did the cultures surrounding these individuals permit or encourage them to paint, and reward their efforts with food, prestige, or power? There is one very simple possible answer: Just as there may have been people who felt the urge to create art objects, there may have been others who enjoyed them enough, simply as art objects without other significance, to support or at least tolerate the artists. Indeed, this answer may underlie all others. This does not explain, however, the striking differences in the subject matter of Indian paintings over successive periods of time. Nor does it accord with the reports of anthropologists who find different social motivations for artistic effort in different contemporary primitive cultures, e.g., ancestor worship for some Australian aboriginal paintings, and hunting magic for some African tribes.

It seems to us that similar distinctions among the reasons for social support of artistic effort in the evolution of Indian rock painting can be hazarded, based on their changing subject matter and on inferences from the reports of anthropologists.

Shapeless red wizard
Style 7
Neolithic/Chalcolithic
About 16 in.
Restored

Religion?

We suggest that in the earliest four numbered styles, in which the subject matter centers upon large animals, the social motivation was primarily religious. For this limited purpose we narrowly define religion as an emotional experience of awe, worship, fear, and propitiation. The green drawings, to which we have not assigned a style number, present a special problem. By analogy to the paintings of some recently "primitive" people they may represent wizards, shamans, ancestors, or other anthropomorphic spirits—friendly or otherwise. They may or may not fit our definition of religion, as distinct from magic, or shamanism.

Early man in many parts of the world probably experienced attitudes of wonder, reverence, and fear toward many wild creatures. In Central America, for example, the objects of worship were the Jaguar and a serpent; in the Paleolithic caves of Switzerland, the Cave Bear. Similarly in India, early man may have experienced these attitudes toward such animals as the elephant, tiger, leopard, and bison. These animals appear in the paintings to have formed a pantheon of gods in which the bison, because of its enormous size, power, and numbers, was the equivalent of Zeus. It may be that to propitiate them before or after the kill, hunting clans felt the need for an act of worship. The painting would have focused the worship, and the ceremonies attending it may have transformed fear into peace of mind. Artists or priests who could perform the rituals and create the painting would have earned prestige and and perhaps other rewards.

Magic?

In styles 1 and 2 no humans appear. In style 3 humans are scarce and passive. In one painting in style 4 at Bhopal two humans are lying prone under the forefeet of an antelope. But from style 5 on a change occurs as great as the difference between the green drawings and style 1. Man now dominates the animal. In hundreds of paintings men armed with barbed harpoons, spears, or bows and arrows attack, surround, or dance about an evidently doomed animal. These paintings may, of course, simply record the events of a successful hunt. But if an inference can be drawn from reports of recently primitive societies, the pictures may represent ceremonial magic before the hunt, invoking a successful outcome.

Although most anthropologists agree that there is a broad overlap between religion and magic, there is an important distinction. Magic is the manipulation of objects, images, symbols, and rituals to produce a specific and immediate result. It is less designed to propitiate the object

Man and trap? or shield?
Style 18
Bhimbetka
Late medieval
Restored

of fear than to command success in overcoming it. It is less concerned with awe, reverence, and worship than with killing an antelope, curing or inflicting an illness, exorcising an evil spirit, or making the rain fall. If these later pictures do in fact represent ceremonial magic before the event, rather than a record of what happened, the artist was the agent of the community in promoting the success of the hunt—as well as satisfying whatever purely aesthetic interests the community may have had.

Regardless of whether our distinction between religion and magic will withstand critical scrutiny or, indeed, whether either can be ascribed as social motives for support to artistic effort, it seems clear that from very early protohistoric times to the present some of the shelters have been regarded as in some sense sacred, magic, or enchanted places. The presence of inscriptions in Brahmi, Gupta, post-Gupta, and successive forms of Nagari script attest to the occupation of the shelters by hermits or other religious recluses as early as 300 B.C.E.

The practice continues today at several places in central India. At Narsinghgarh, a large shelter has been whitewashed and converted into a temple; at Bhimbetka, one of the largest shelters has become the abode of a priest and his elephant; nearby are the remains of many very early Buddhist stupas; at Pachmari, a painted shelter has become a Saivite shrine; near the Bhaldaria shelter in Mirzapur District a painted shelter has been walled in as the refuge of a forest hermit.

It is as though a syncretic process, familiar to the historians of all religions, were at work—a process in which a newer religion identifies itself with the remnants of an older religion. It appears that for the same reason that the shelters were repeatedly repainted during earlier millennia for ceremonial purposes, they were and still are occupied by later cults to secure the blessings of the past.

A variant of this phenomenon occurs in a few cases in which a shelter is assigned, by contemporary villagers, a Hindu mythological significance. Near Raisen a painted shelter is known as Ram Jerokah; Rama, an incarnation of Vishnu, is said to have used it as a throne.

Secular Record?

As the millennia crept past, the artists' interests—or the community's interest in the artists—seem to have taken on a new form. There is a shift from pictures possibly reflecting religious or magical intent to pictures recording the daily life of the shelter dwellers, important events in the valley cultures, or conflicts between the two societies. There are pictures of gathering honey, or bearing burdens, of

Phallic wizards and dog
Style 4
Ahiraura
Mesolithic
About 16 in.
Restored
The dancers have elbow decorations, which appear in paintings of several later periods.

carrying ceremonial insignia, of vultures drying their wings, of monkeys leaping through the trees, of domestic scenes such as one in which a man plays a harp, a woman beats time, and a child dances. But there is now more fighting than dancing: raids by the hill people on the domesticated cattle of the plainsmen; fights between tribes; battles between hill people and valley people; battles on horseback; conflicts involving elephants driven by mahouts. Times had changed and the pictures changed with them.

Why would hunting-and-gathering shelter-dwellers paint pictures of caparisoned elephants; horses with elaborately ornamented bridles; men dressed in full-length costumes, sword belts, and metal swords; carts and chariots; kings with attendants; or the elaborate spectacle of bull vaulting, which, as the pictures show, required the use of domesticated Zebu bulls?

The evidence from the pictures and from excavations in the painted shelters suggests a succession of relationships between the shelter people and the much more advanced cultures of the nearby valleys, plains, and traveled ways. In the earliest period the shelter dwellers were completely separate in time or place and were

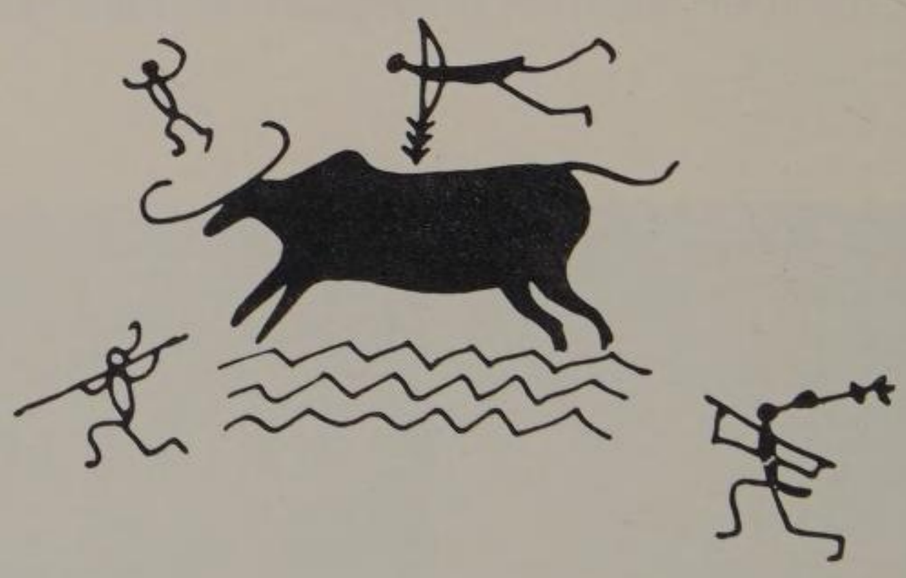
Hunting Magic

A recurrent theme from the Mesolithic style 5 to the medieval style 18 is the death of animals or humans. Pictures of these events were probably painted for ceremonial magic in efforts to induce success in the hunt or in combat. Summary, drawn by VSW

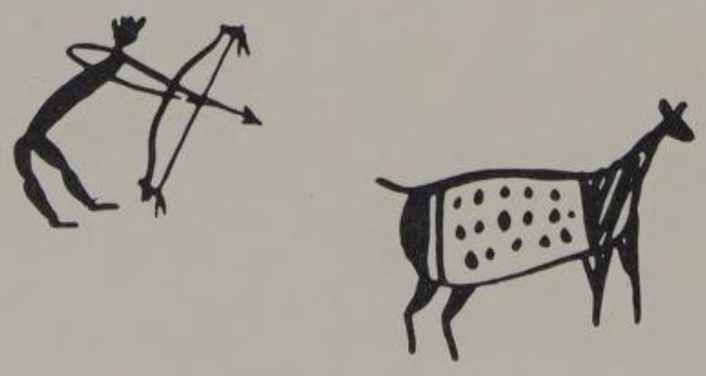
Narsinghgarh

Simla Hill, Bhopal

Raisen



Dharampuri



Kharwai

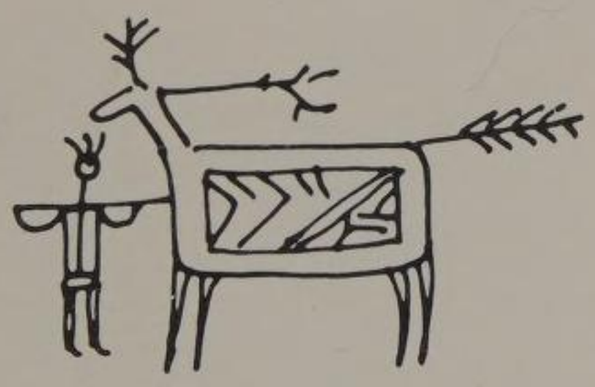
Ghatla

motivated only by their own circumstances and traditions. Then apparently followed a predatory phase typified by raids on villages, cattle stealing, and highway robbery. Indian tradition and myth have many references to this uneasy relationship. Pictures of a successful raid, or the magical aid of a picture before the event, were recorded on the shelter walls, as at Pachmari.

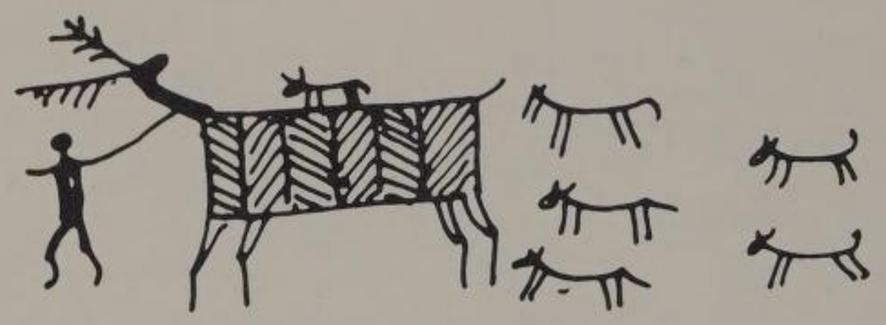
Studies of contemporary tribals and excavations in the shelters suggest that this phase was followed by one in which the two cultures became marginally interdependent. From the hills came honey, roots, baskets, mats, sago-palm-sap wine, medicinal herbs, firewood, and the blossoms of the *Mahua* tree to be crushed, fermented, and distilled into a crude liquor which, even now, is traded back to the tribals in eastern Madhya Pradesh. From the valleys came pottery, metal arrow tips, and metal hatchet blades. Some of this trade may have gradually developed into such periodic festival markets as still occur among the Gonds of Bastar State. But hunting and gathering would continue as the mainstay of the shelter people, and their life would remain vital enough to inspire putting it in pictures.

Bhaldaria

Lakhajuar (Bhimbetka)



Kandakota

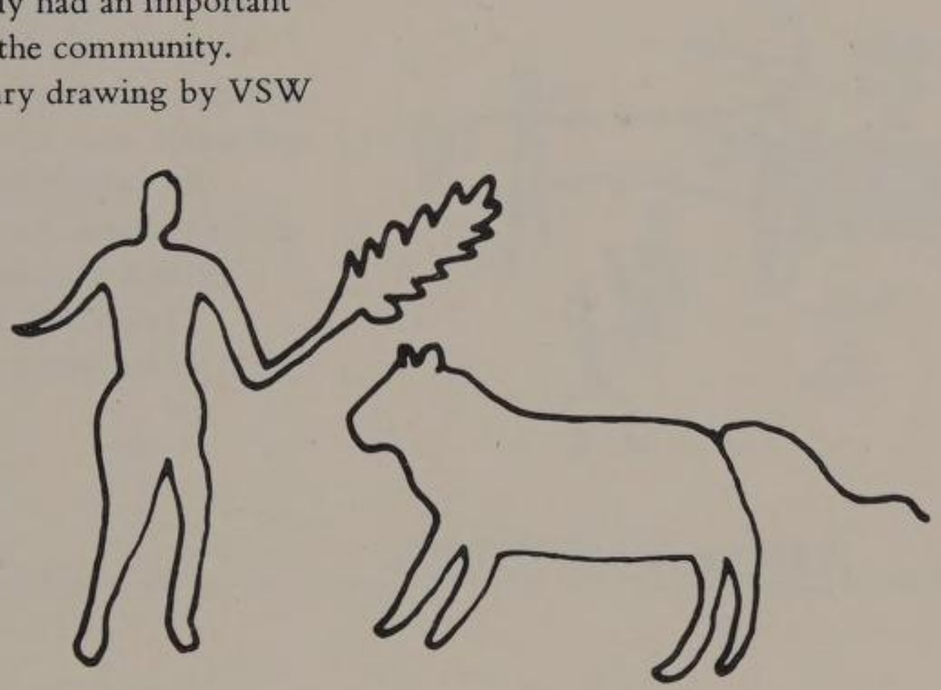


Putlikarar

Tribal conflict with
monkeys watching
Style 9
Neolithic/Chalcolithic
About 18 in.
Restored
This is the earliest picture
of tribal conflict that can
be dated with some certainty.

Shamans or Wizards

Wizards of some sort
evidently had an important
role in the community.
Summary drawing by VSW



Still later, the hill people became dependent upon the dominant culture. If, as the ruins at Bhimbetka indicate, a fort and several temples were built upon a mountain having many shelters, hunting would be eliminated as a source of food and the remaining shelter dwellers would be forced to gain part of their living from begging and scrounging odd jobs. Enough of the painting tradition might still survive, however, to motivate the artists to record the invading king's processions, great battles, or tiger hunts. The pictures at Bhimbetka provide scores of illustrations of these events. This succession of relationships seems to us to offer a reasonable explanation for the changing subject matter of the paintings and to support the view that they were created over a long period of time.

Symbols?

From style 4 through the most recent styles, the paintings include markings that are not representational and that appear to be more than purely decorative. We have classified them as symbols, despite the fact that there is no way of knowing what they meant to contemporary viewers. Styles 6, 11, 14 and 15 in the style

Tribal battle
Style 16
Pachmari
Historic period
About 20 in.
Restored
One fighter has a metal sword, shield, and more clothes than the other.

chart provide illustrations of frequently recurring markings of this kind. The guesses that have been made by other students about similar paintings in other parts of the world include: animal traps, crude dwelling places, fertility cults, clan markers, territorial boundary markers, possession of a shelter, direction signals, the nearby presence of other paintings, sacred place marks, magic places, taboo marks, ceremonial devices, and calendar systems. Some of these guesses may apply to the Indian paintings, but we know of no way of even speculating about their meaning.

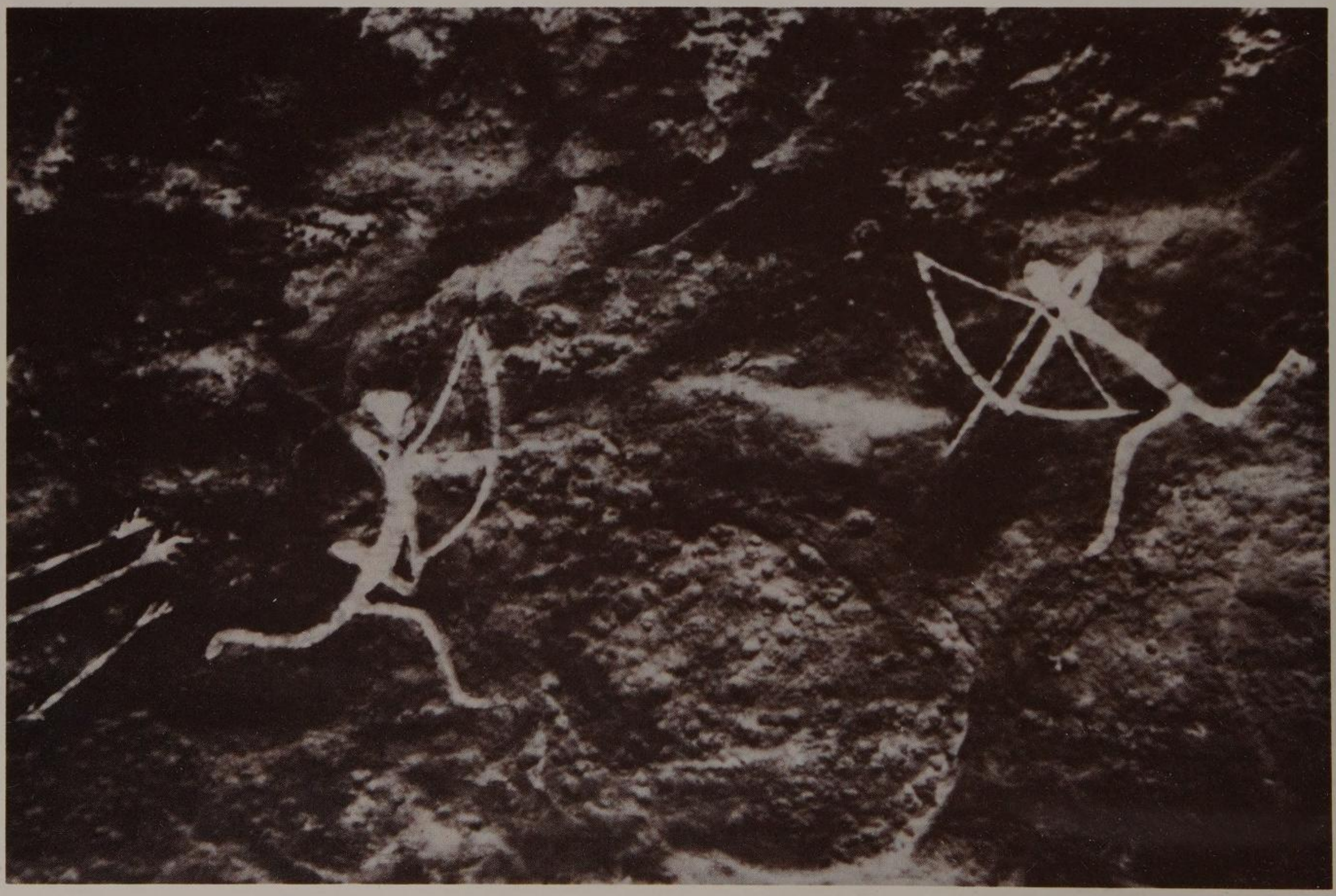
Decoration?

It is possible that some of the markings may be no more than decoration. There are many examples of endlessly repeated designs. But it is not always possible to be sure that these are not the infilling of large figures, the outlines of which have been lost.

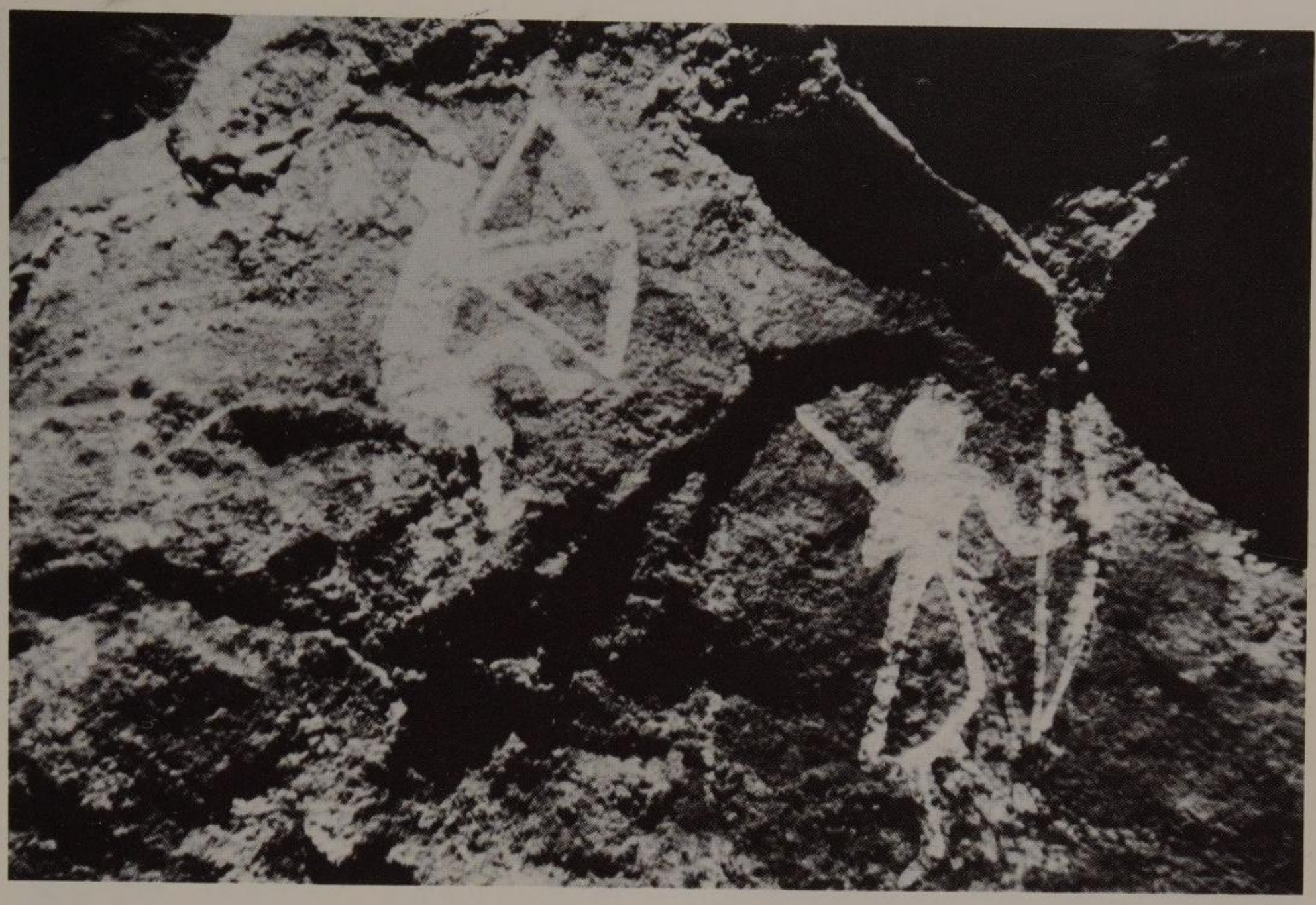
In 1973, S. A. Sali reported finding an engraved ostrich egg shell in an open campsite, Upper Paleolithic layer, near Patne. In 1974, Wakanker reported finding a bone engraved with cross hatching in an Upper Paleolithic layer, and another in a Mesolithic layer at Bhimbetka, Shelter III A-28. Additional search for engravings on bone or soft rock may also show evidence of the use of calendrical devices such as those now well authenticated by Alexander Marshack for earlier periods in France. Study of the many rock engravings or bruisings on granite boulders in the south of India may provide additional evidence about motivation for artistic effort. But for now we conclude that for many thousands of years individuals with artistic talent were encouraged by their contemporary cultures to use their skills for a succession of reasons: religion, magic, the enrichment of ceremonial occasions, secular records, symbolic communication, and decoration of dwelling places.

Two bowmen
Style 16
Pachmari
Historic period
About 16 in.
Restored

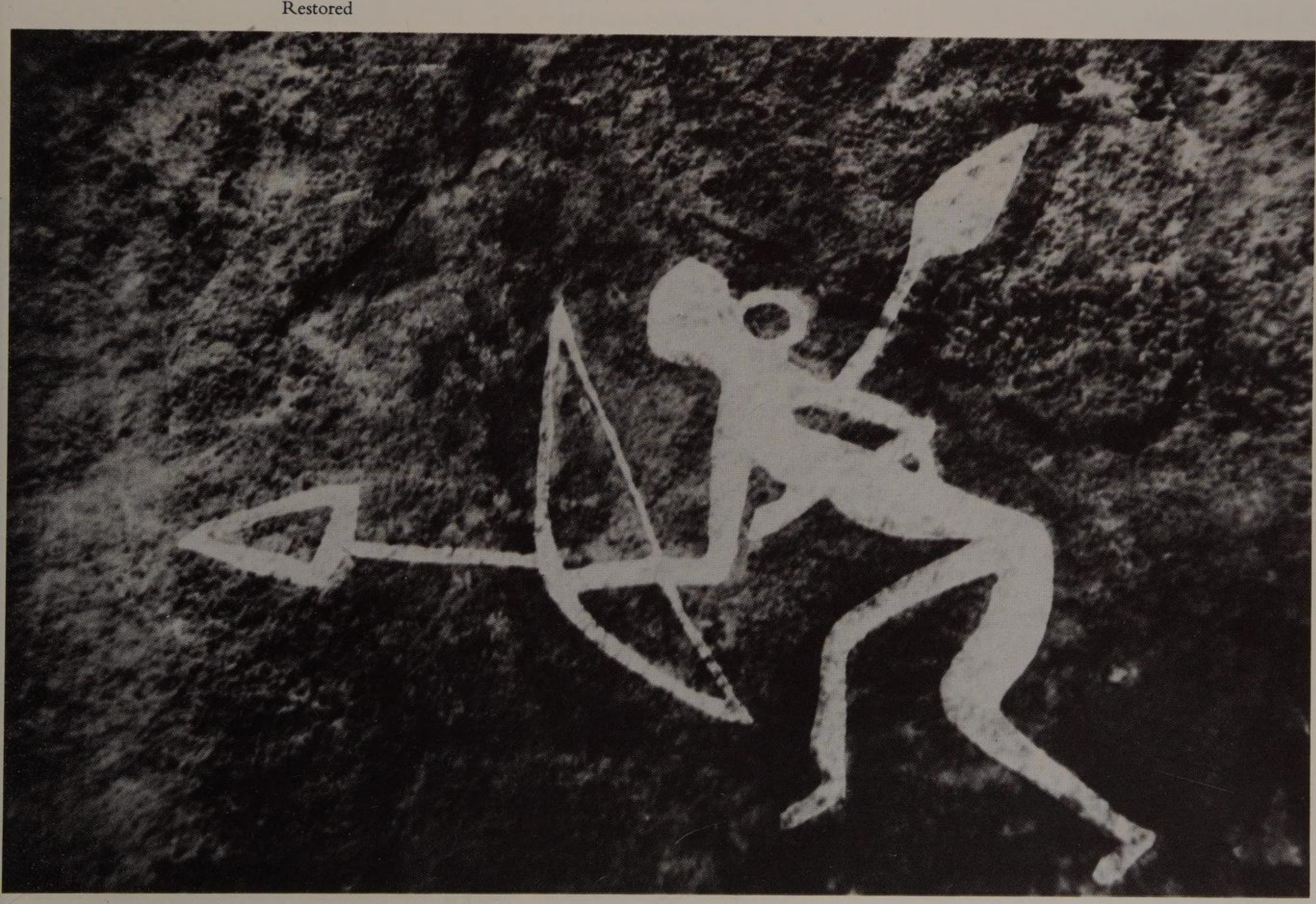
The violent action in this and other style 16 pictures is strikingly similar to that of rock shelter pictures in eastern Spain, the southern Sahara, and the Kalahari Desert.



Ambush
Style 16
Pachmari
Historic period
About 12 in.
Restored
The skimpily clad archer at left seems to have surprised the fully clad bowman turning to face him.



Single bowman
Style 16
Pachmari
Historic period
About 8 in.
Restored



Bull-leaping
Style 5
Narsinghgarh
Late Mesolithic
About 10 in.
Restored

This painting presents a moving picture of the terrifying sport of bull-leaping. The boy leaps for the running bull's horns, somersaults onto its back, and somersaults again to the ground. A small dog, jumping through the bull's horns, complicates matters.

Bull-leaping
Style 5
Raisen
Late Mesolithic
About 10 in.
Unrestored photo
In this and the above picture the terrifying sport of bull-leaping is clearly shown. Since the shelter dwellers did not have domesticated cattle, presumably the artist was recording a scene from the more advanced valley culture.

Tiger hunt
Style 13
Bhimbetka
Early Historic
About 3 ft.
Restored

The tiger is tired. A frightened horse is being led. The feathered umbrella suggests a noble presence. Shields, metal-tipped arrows and spears, and metal swords are clearly shown.

Cavalry
Style 13
Bhimbetka
Historic period
About 20 in.
Restored

Elephant hunt
Style 9
Neolithic/Chalcolithic
About 16 in.
Restored

Mounted warrior
Style 13
Bhimbetka
Historic period
About 14 in.
Restored

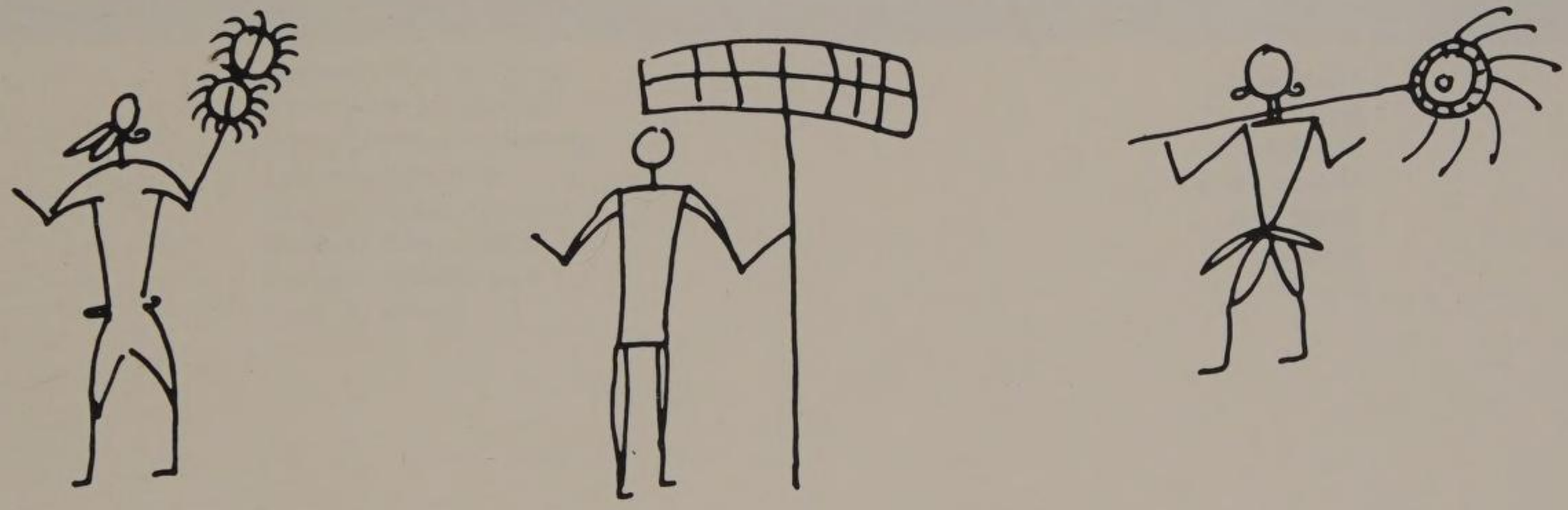
Load Bearers

Found especially in style 16
Drawings by VSW

Trumpeters
Style 18
Bhimbetka
Historic period
About 14 in.
Restored

Standard Bearers

Found especially in style 13
and later.
Summary drawing by VSW

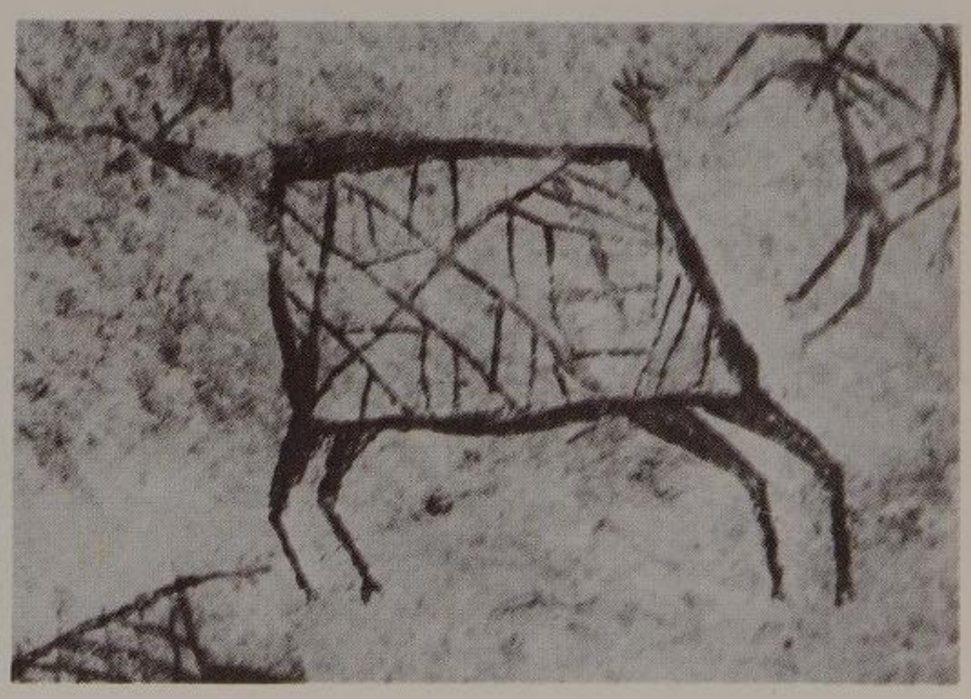


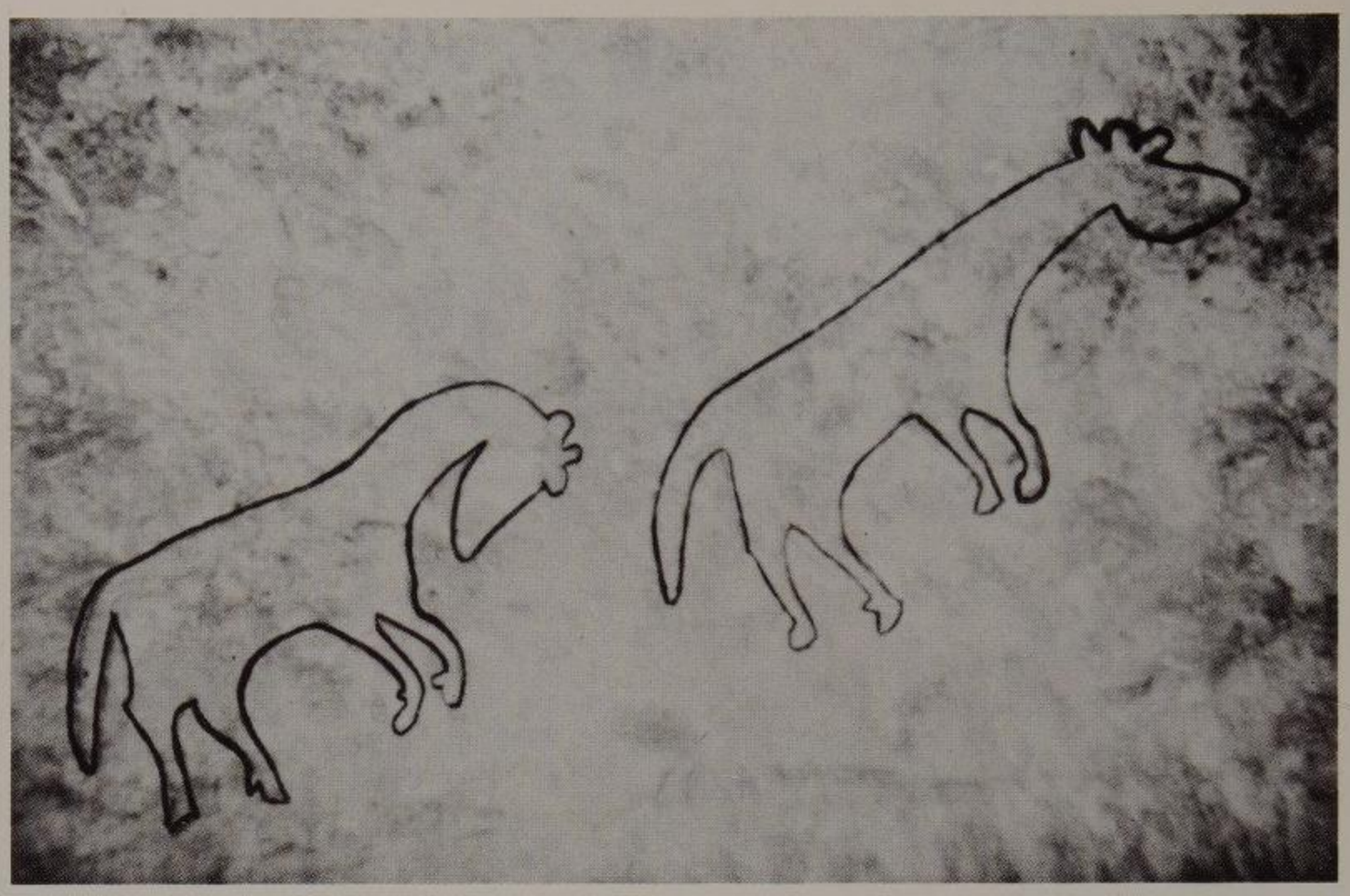
The charge
Style 13
Bhimbetka
Historic period
About 20 in.
Restored

Horsemen versus footmen
Style 13
Adamgarh
Historic period
About 20 in.
Restored

Distortion of animal necks occurs in the paintings of several periods. In a painting now inundated in the Chambal Valley, distortion produced these mythical creatures. Freehand copy by M. V. Oureshi

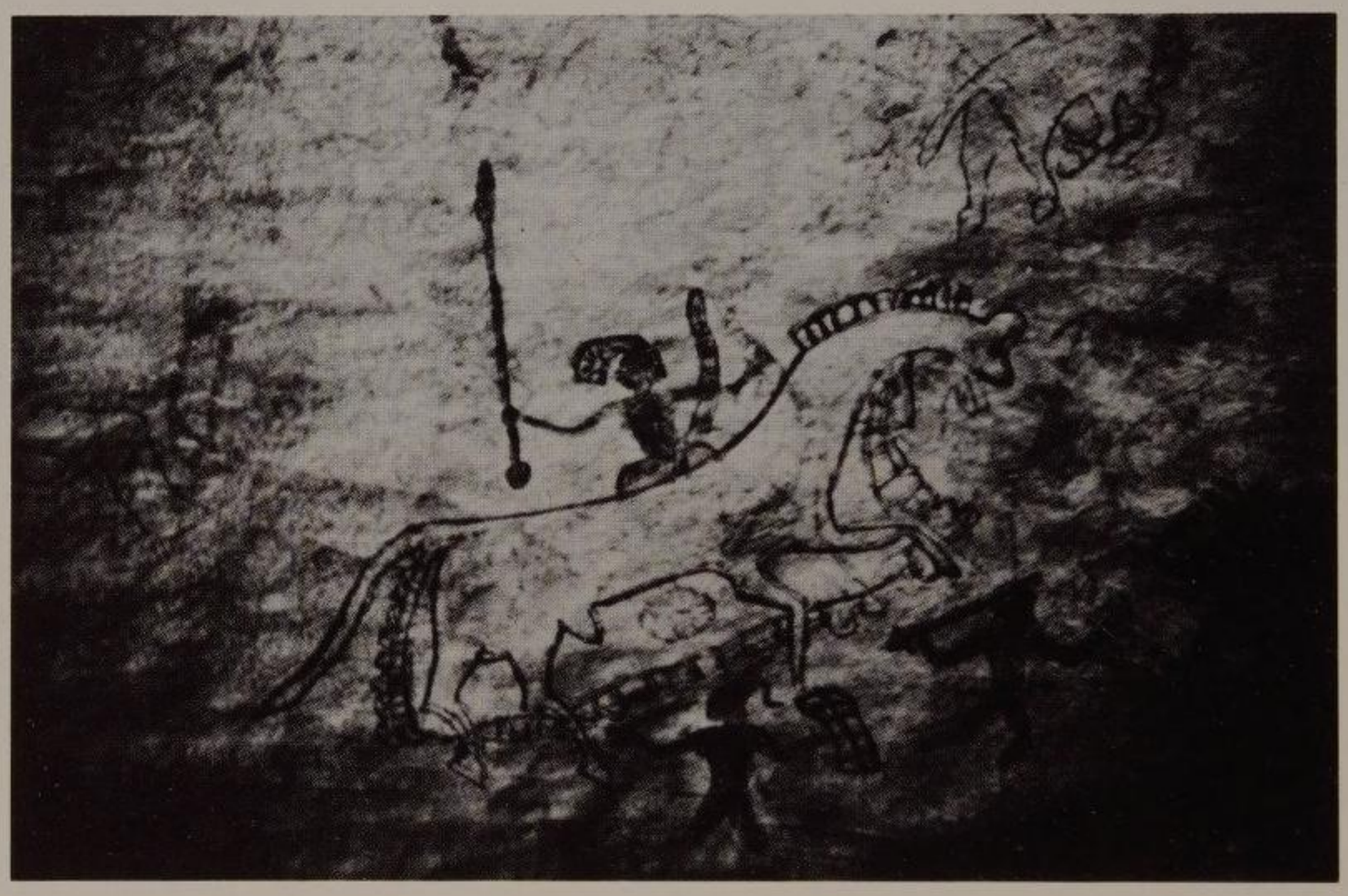
Three hundred miles away at Raisen, similar distortions of the neck appear in later styles.

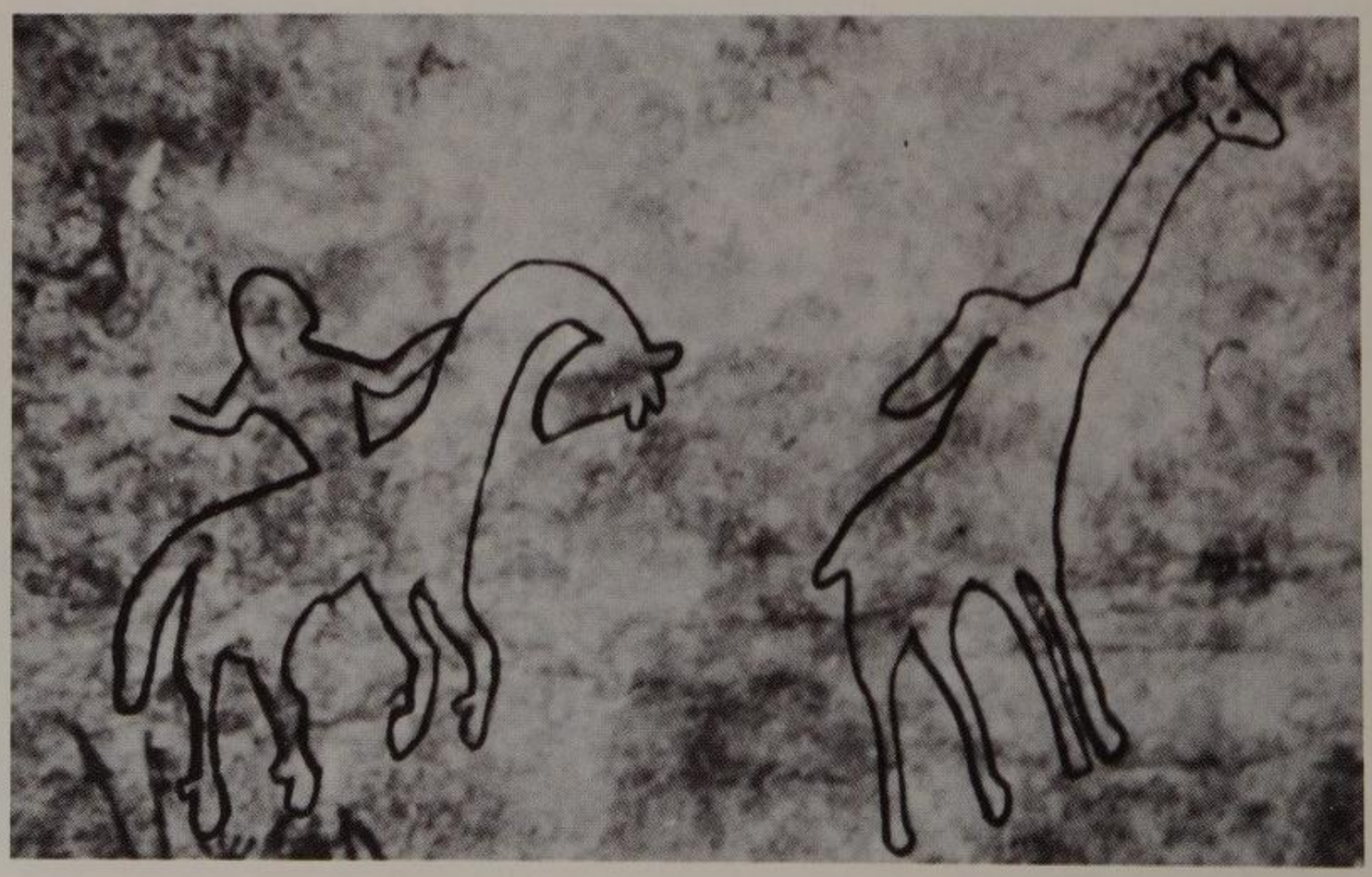


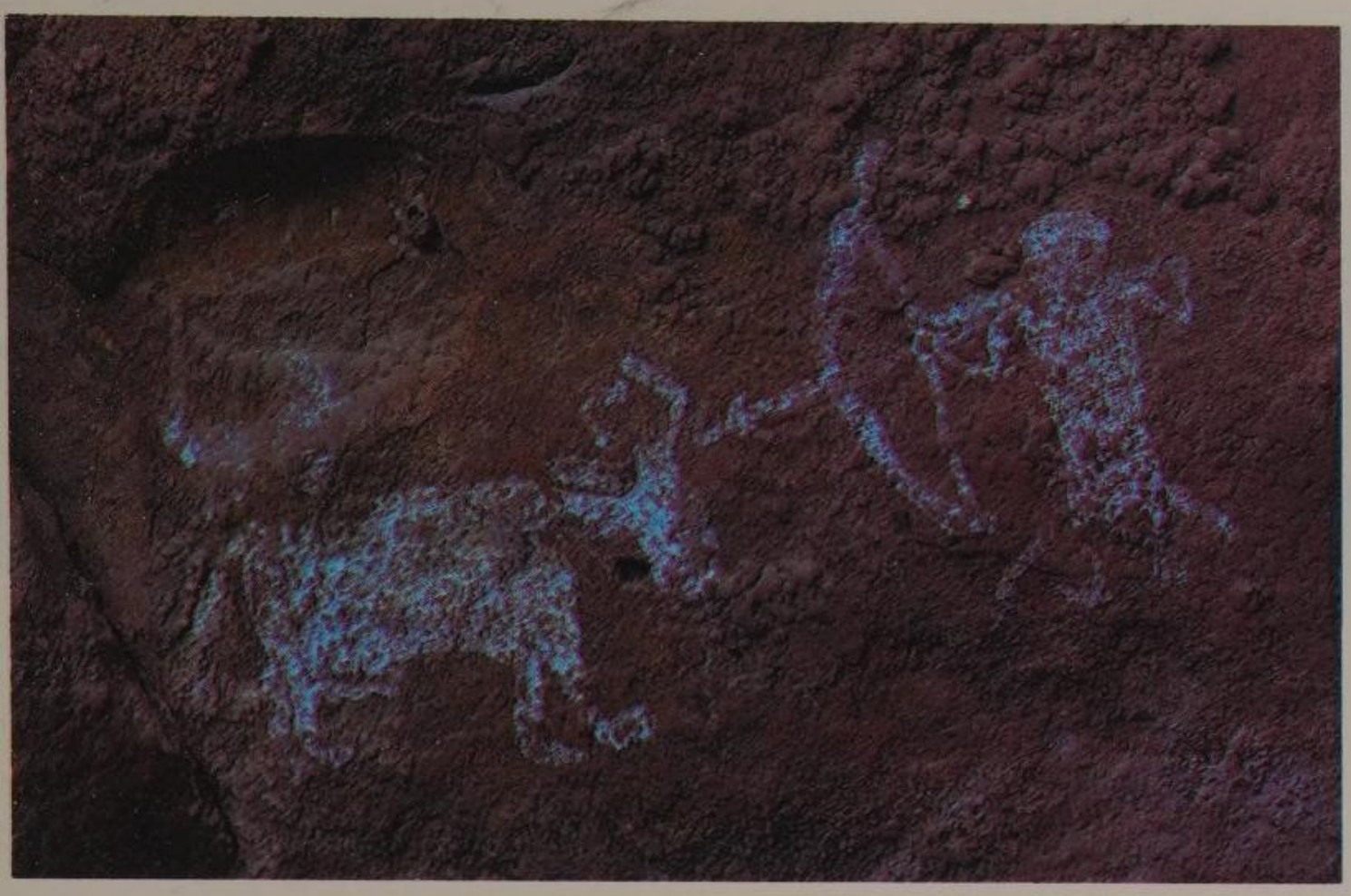


Archer and bovid ▶
Style 9
Pachmari
Neolithic/Chalcolithic
About 14 in.
Unrestored photo

At Adamgarh, in the much later style 13, the drawing of Przewalski horses evolves until the horse becomes a "giraffe," which has never existed in India.

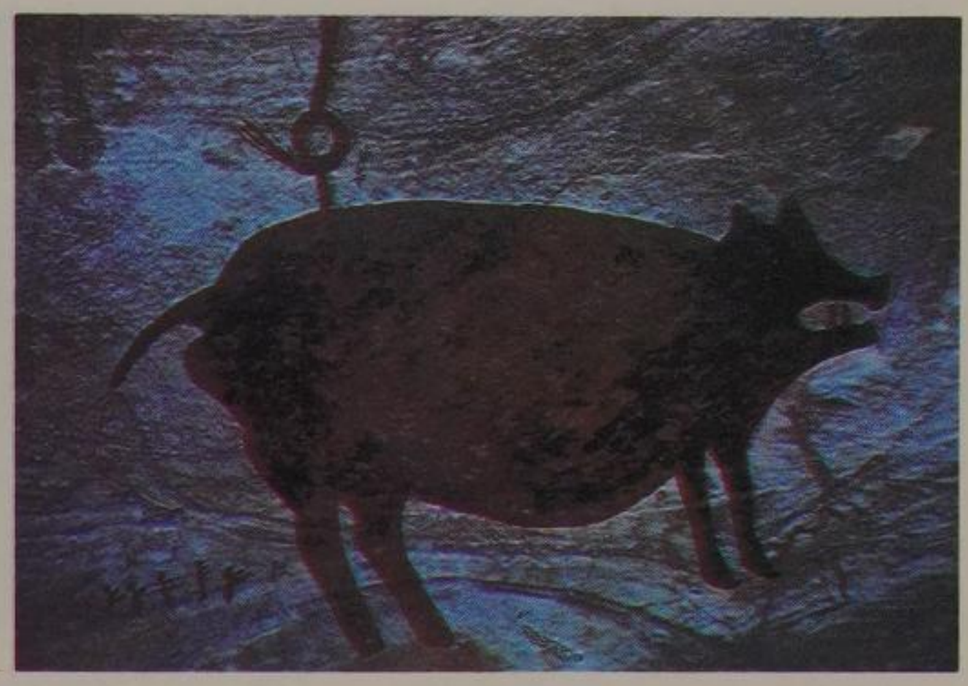






Death of a barasingha
Style 7
Bhaldaria shelter
Ahiraura
Neolithic/Chalcolithic
About 18 in.
Restored

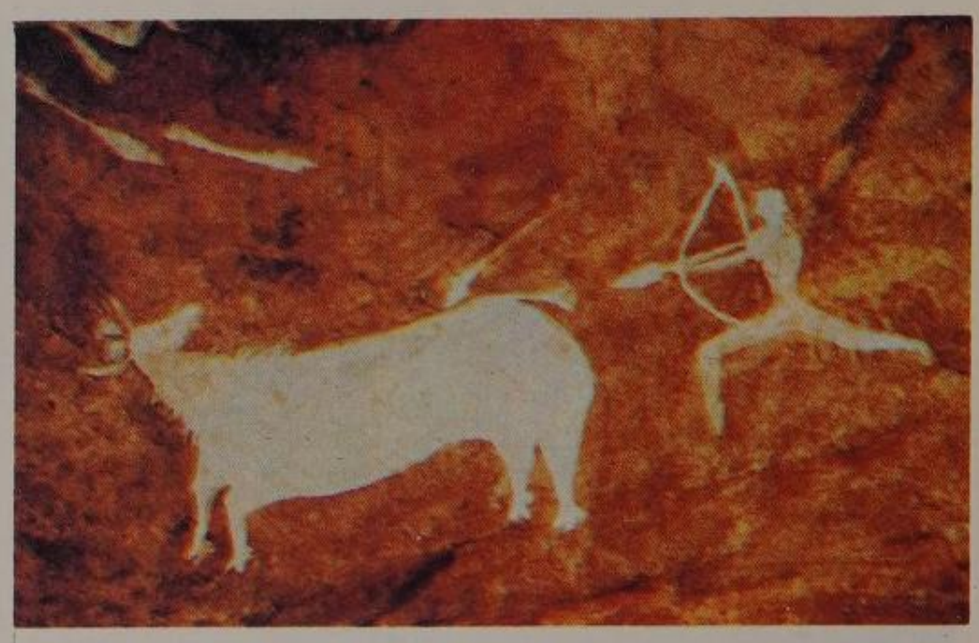
Despite her antlers, the victim is clearly a lactating female. Milk is spilling from her udders, her entrails have fallen out, and blood is spurting from her breast. A small dog protests. Two humans turn away in fear or shame.



Boar in agony
Style 7
Ahiraura
Neolithic/Chalcolithic
About 30 in.
Restored

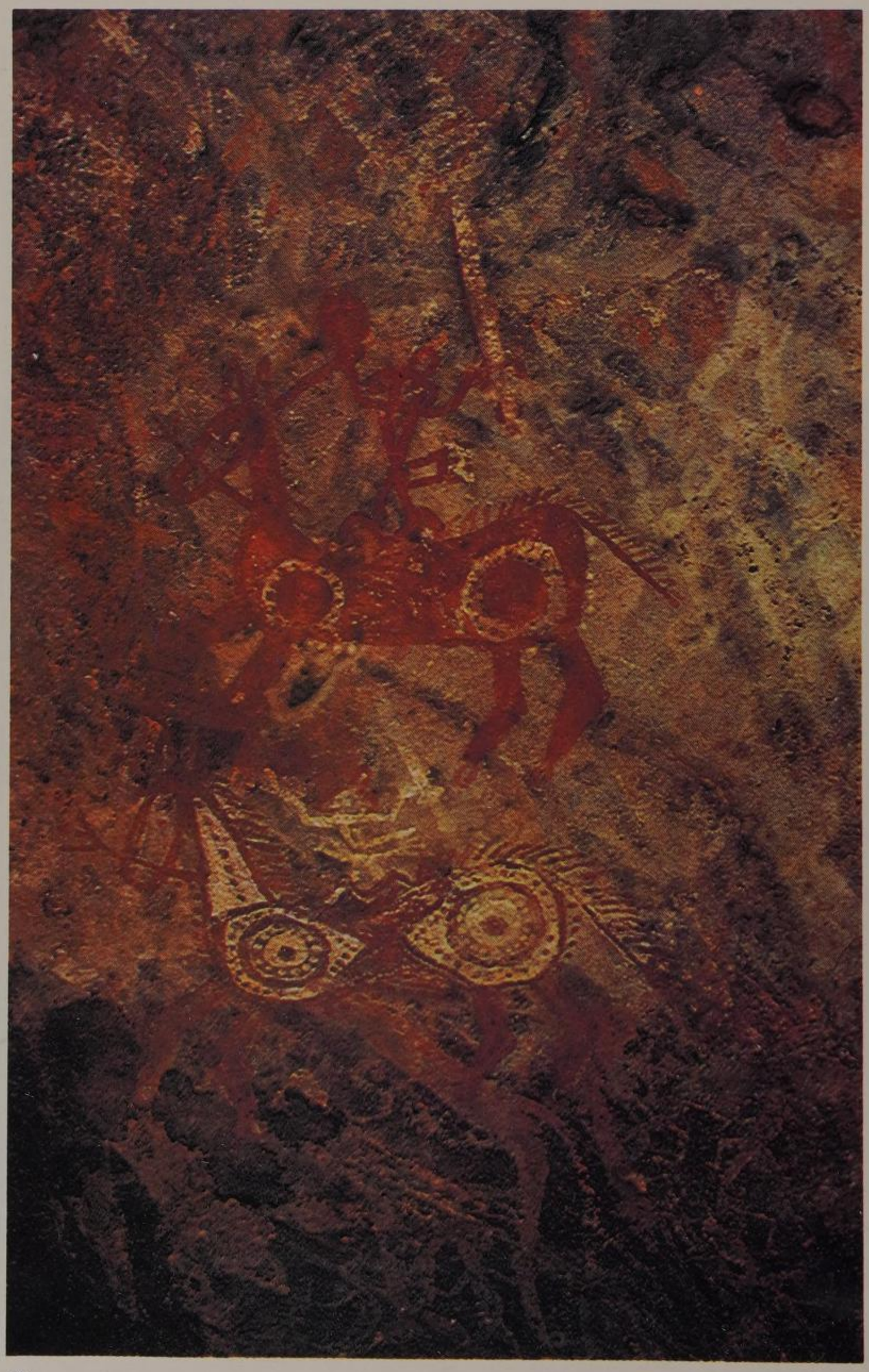
The spear shaft and attached cord are shown as having been broken off. The suffering of the victim is vivid.

Death of a nilgai
(an antelope)
Style 12
Sharad Karad
Early Historic period
About 18 in.
Restored
The short curved horns and the beard are typical of a nilgai. The size of the bow and arrows is exaggerated.



Protesting cow
Style 16
Pachmari
Historic period
About 14 in.
Restored
The cow seems surprised and grieved.

Doomed horses
Style 18
Kharvai
Late medieval
About 12 in.
Unrestored photo
The spears through the necks of these horses armed with shields suggest that even late in the medieval period the shelter dwellers were summoning magic to help them against their mounted foes.

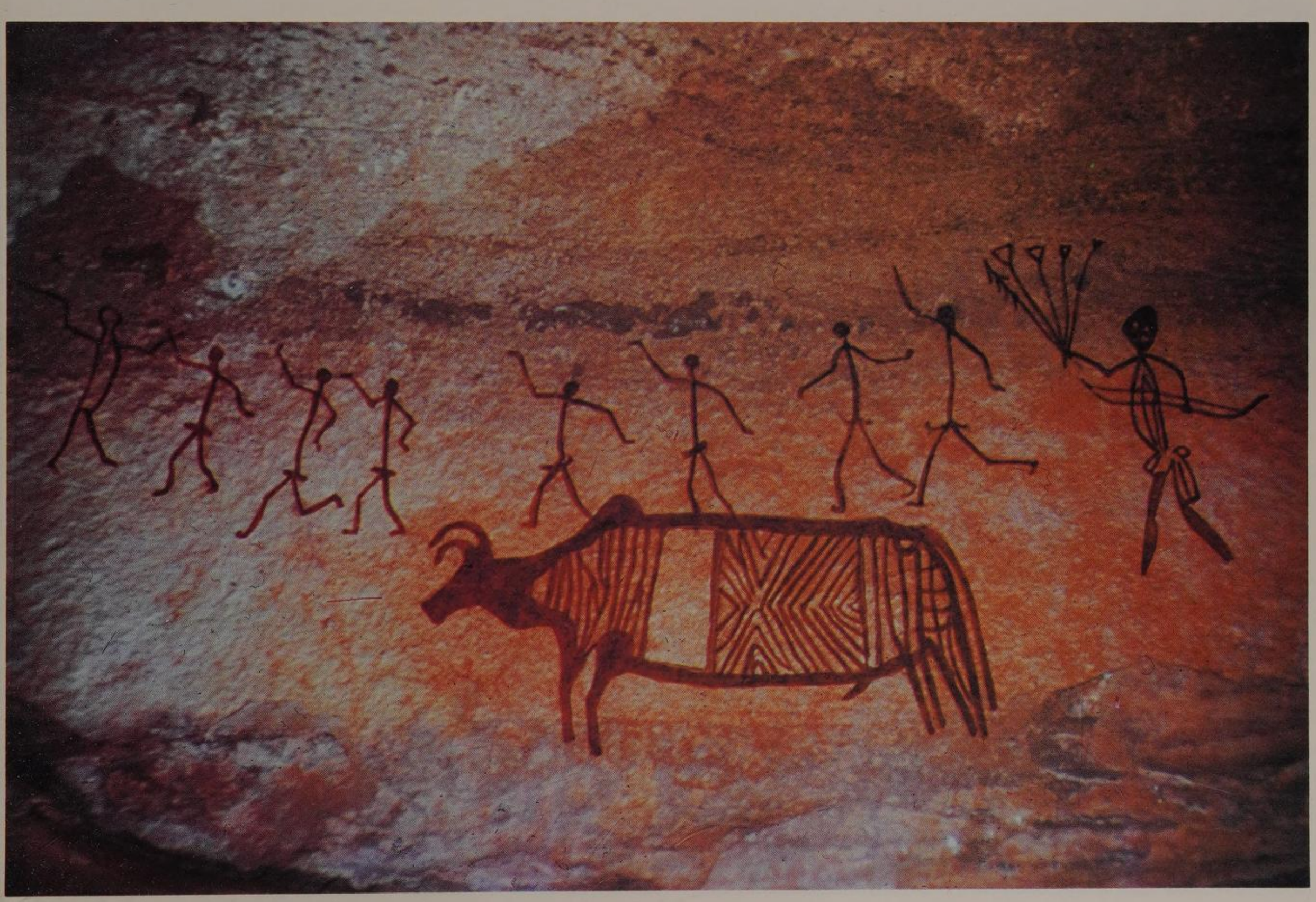


Hunting dance ▶
Style 5
Bhimbetka
About 20 in.
Restored
A wizard with inverted arrow tips appears at the right.

Wizard's dance
Style 4
Bhimbetka
Mesolithic
About 18 in.
Restored

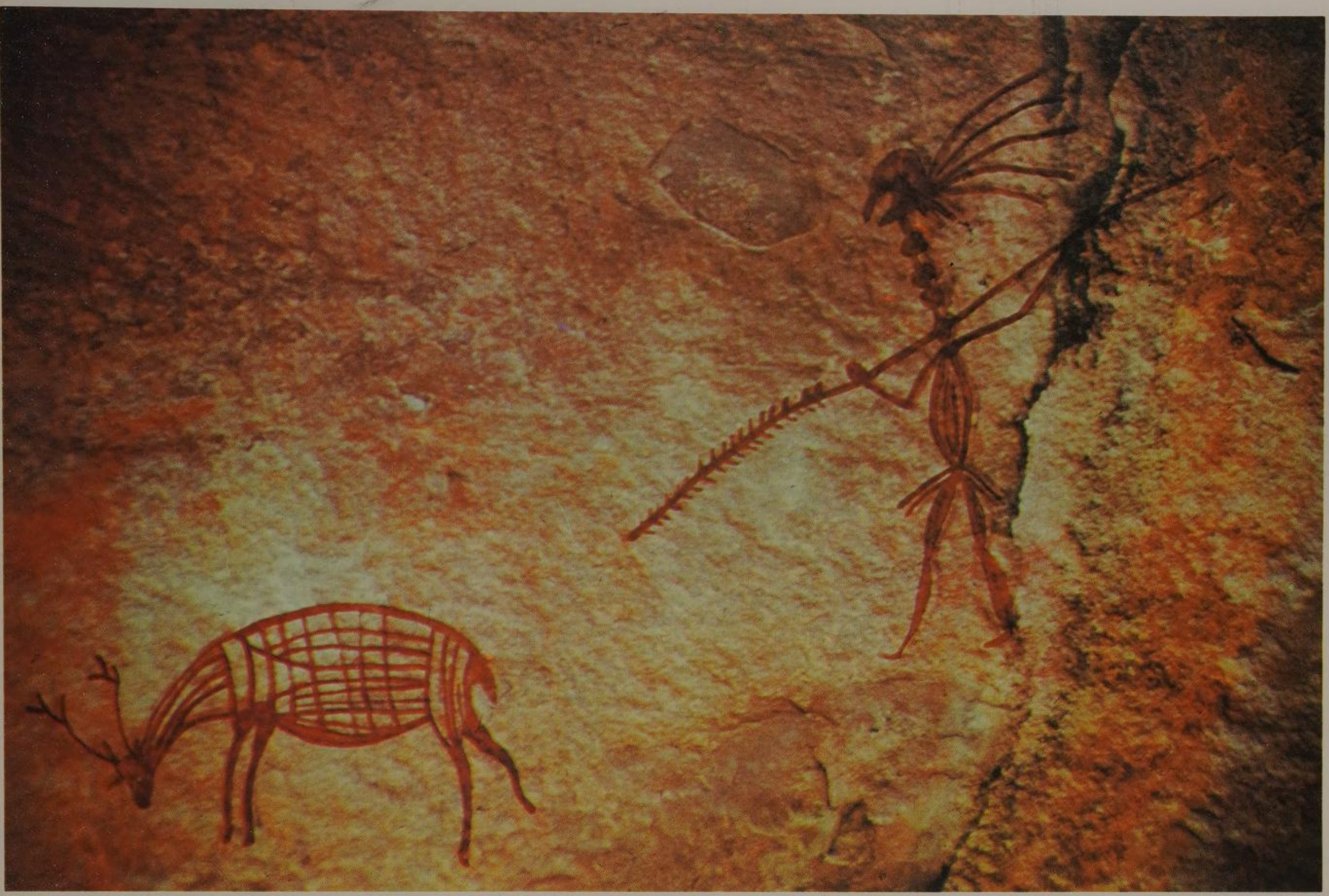
One dancer has a bison horn mask; one, a feathered headdress; a third, a wolf's-head mask and claws. The fourth seems to be taking off toward outer space.

Dancers with drums
Style 13
Bhimbetka
Early Historic period
About 12 in.
Restored



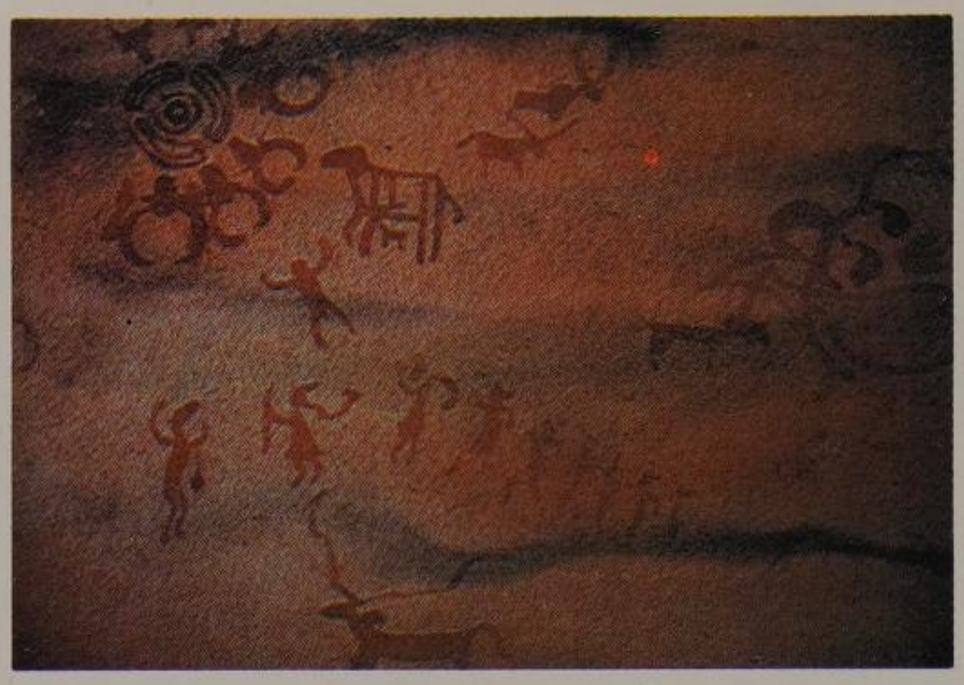
Dancing warriors
Style 13
Adamgarh
Early Historic period
About 20 in.
Restored

Wizard's dance
Style 4
Bhimbetka
Mesolithic
About 16 in.
Restored
One dancer has a bison-horn mask, the other a feathered headdress. The two other figures appear in a suppliant position.



Wizard with four heads
Style 5
Bhimbetka
Late Mesolithic
About 20 in.
Restored

Wizard with deer and bison
Style 5
Bhimbetka
Late Mesolithic
About 20 in.
Restored



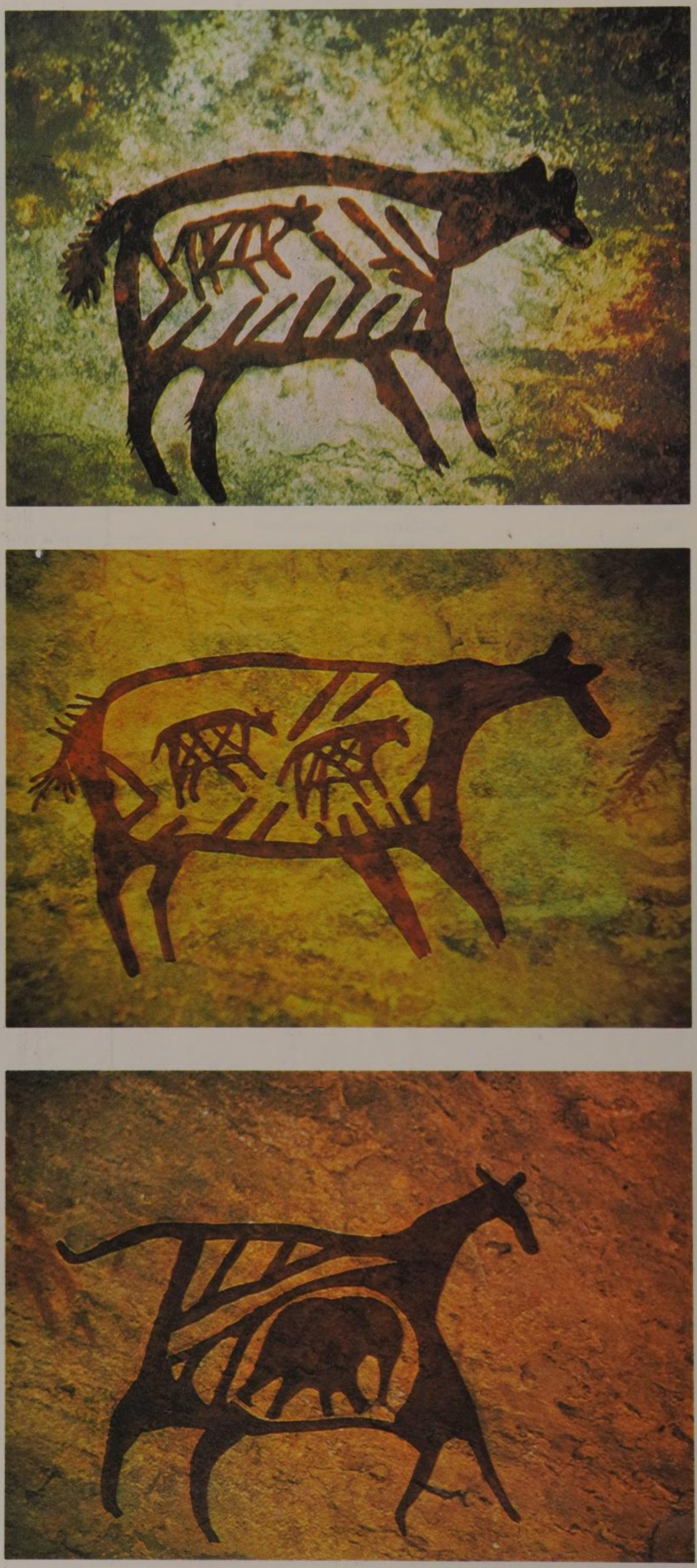
Bull sacrifice
Style 7
Sujanpura
Neolithic/Chalcolithic
Freehand watercolor copy
by VSW
Although there may have
been a cult of bull sacrifice
among the shelter dwellers,
the presence of domesticated
humped cattle suggests
that the artist was recording
a valley culture ceremony.
Skulls of bulls are arranged
around an altar and another
victim is being driven
toward it.

Tribal warriors with shields
Style 13
Early Historic period
About 14 in.
Restored
One fighter seems to belong
to a clan indicated by the
bison-horn headdress; the
other, to a clan indicated
by the eagle or vulture
headdress. Bison Horn has
a metal sword; Eagle
Feather, a throwing stick.

Elephant hunt
Style 13
Ahiraura
Early Historic period
About 20 in.
Unrestored photos

In this painting of tame elephants, horses, beaters, and noisemakers being used to capture a wild elephant, the hunt can be seen exactly as it is still carried out in Mysore.

Big battle
Style 13
Bhimbetka
Historic period
3–4 ft.
Restored



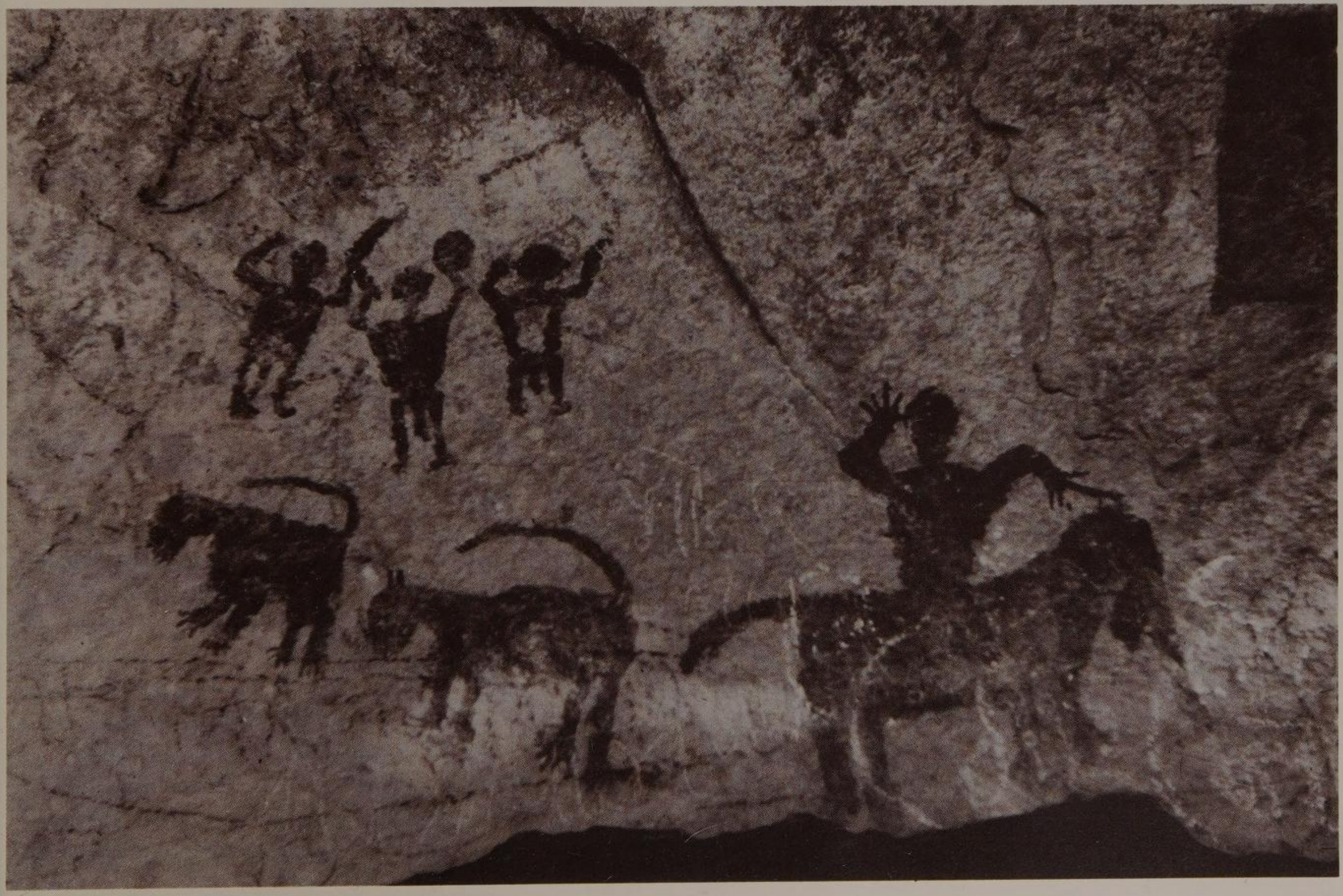
One conception of the X-ray convention appears in these three paintings in style 5 at Hathi Tol shelter, Raisen. The two pregnant cows may represent some sort of fertility magic; the Nilgai antelope pregnant with an elephant may illustrate a myth or reflect a sense of humor.
Restored

The Problem of Outside Influences

One of the striking aspects of Indian rock-shelter painting is the almost complete absence of the symbols of any of the principal Indian religious traditions: the Vedic cults, Saivism, Buddhism, and Vishnavism. The Vedic gods of 1500 B.C.E. were the sun, moon, stars, fire, and thunder. The earliest Saivite symbols, deriving in part from the Indus Valley culture, were the fertility representations of the mother goddess, the erect phallus, and the humped bull. Later, the Saivite tradition adopted the cobra with spread hood, the pipal tree, the half-man/half-elephant, and the trident. Vishnavism gradually came to include among its idols or avatars the turtle, the fish, the bear, the monkey, the vulture, the half-man/half-lion, and the folk heroes Rama and Krishna.

None of these cult figures appears in the rock-shelter paintings in a form that suggests any significance other than that animals, birds, fish, and reptiles were a source of food or danger. No recognizable effort was made to portray the Vedic gods. There are few, if any snakes, and none with spread hoods. There are few trees and even these are either later Buddhist intrusions or merely serve as settings in which monkeys climb and honeybees hang their nests. There are no half-man/half-animals like the Saivite Ganesh or the Vishnavite Narasimhan.

In the artistic tradition of the Indian shelter painters, phallic human figures are very rare. This is in a sharp contrast to early rock paintings in eastern Spain, the southern Sahara and the southwestern United States. No fertility significance is suggested by this picture of the three cymbal beaters from a shelter near Ahiraura.
Unrestored photo



There are many pictures of men wearing masks of birds or animals, but they are squarely in the wizard or shaman tradition and totally unrelated to the main religious streams. In the later periods there are many pictures of humped cattle, both bulls and cows, but in the same periods and styles there are pictures of many other animals. The bull appears only once or twice as a sacrificial object, and it is likely that these pictures reflect the hillmen's view of valley ceremonies.

There are no pictures of animals in coitus, which suggests that the artists either were not interested in fertility, or attached no significance to the act. Nor are there representations of pregnant females as fertility symbols. The vulva is conspicuously absent, in sharp contrast to Saivite icons, where it appears as the *yoni*, or receptacle for the erect phallus. Female breasts, so lavishly displayed throughout a thousand years of Hindu religious sculpture, are rarely shown in the shelter paintings, and then without emphasis. The phallus is sometimes shown, but with only slight exaggeration and with nothing like the emphasis in some primitive art traditions. There are no known pictures of human copulation and no pictures that appear erotic in intent or effect. There are no anthropomorphic gods like the multiarmed figures of Siva and Vishnu. When symbols of the mainstream religions, like the conventionalized tree, do appear late in medieval times, they are obviously the products of recluses from the mainstream cultures.

It would be difficult to overemphasize the extraordinary degree to which the content of the rock-shelter art tradition remained unaffected by the powerful influences of the invading cultures for thousands of years.

Much the same conclusion must be reached with respect to influences from outside of India, despite the persuasiveness of the "diffusionists," who hold that important events in the evolution of human culture usually occur in limited areas and subsequently spread during long periods of time to the rest of the human race. At least one warm supporter of this view has concluded that artistic conventions beginning in Europe about 20,000 B.C.E. have spread as far as the South Sea Islands by one route and the Western Hemisphere by another.*

As illustration of this thesis, the widespread diffusion of the following artistic conventions is cited: the pregnant woman as a fertility symbol; the **W** symbol for the vulva; the animal drawn with its head looking over its shoulder; the human hand shown in life-size stenciled negative; the "lifeline" or X-ray style in which the viscera of the animal are made visible as a part of the infilling of the outline; and the bent-knee position in which humans are shown as partially genuflecting.

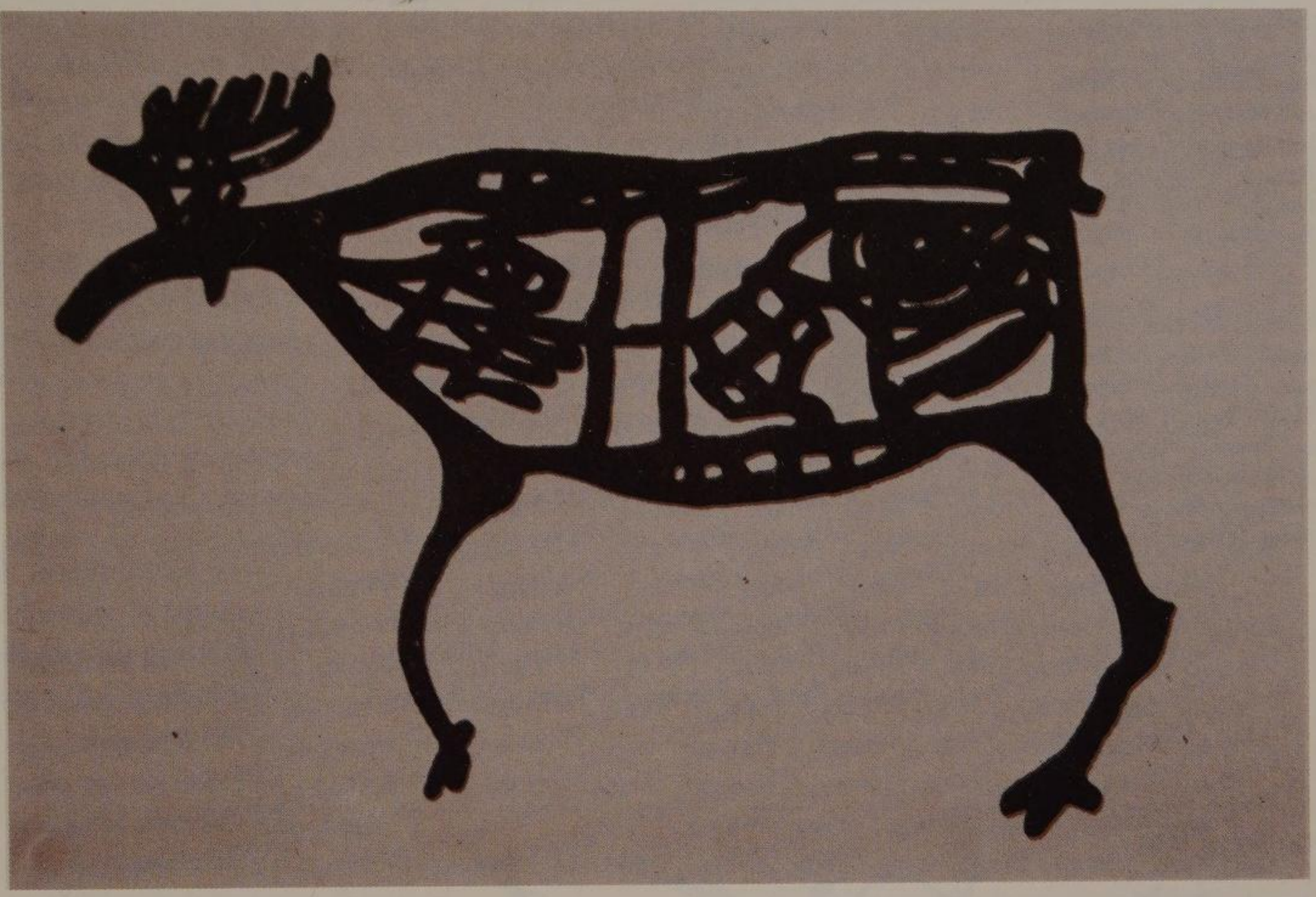
But although there is a good deal to support this thesis in other parts of Eurasia, there is very little evidence for it in the painted rock-shelters of India. As we have stated above, there are no pictures of the vulva, either conventionalized or realistic, and no use of the pregnant woman as a fertility symbol. There is one minor case of a cow looking backward over her shoulder, but she seems quite naturally to be watching the hunter who is about to shoot her. There are very few pictures of the human hand and no known cases of stenciled negatives. The conventionalized bent-knee position appears nowhere.

*Andreas Lommel, *Prehistoric and Primitive Man* (New York, McGraw Hill, 1966).

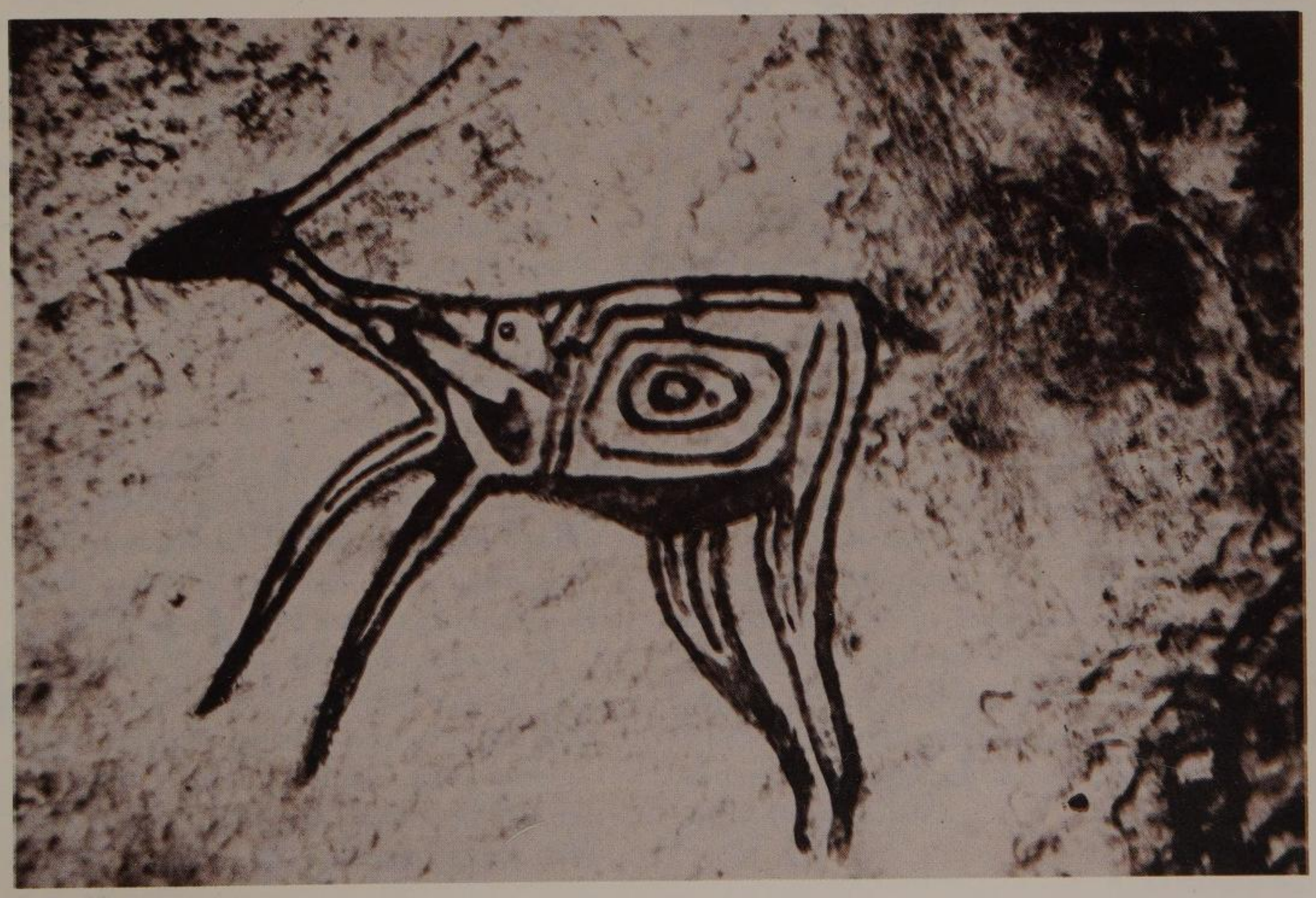
Phallic humans
Bhimbetka
Restored
Again, fertility significance is not strongly suggested.

There is one example of the X-ray style at Hospital Hill in Bhopal and another near Pachmari in which the lifeline (the esophagus and stomach) is clearly apparent. But these appear to have evolved locally from the very few other instances of style 4, in which the musculature and some of the viscera are shown in varying degrees of clarity. In several instances, unborn animals are shown, fully formed inside their mothers, awaiting exit, wrong-end-to! At Hathi Tol shelter near Raisen, there is one cow with a calf waiting to be be born, and another with twins. Nearby is a nilghai antelope pregnant with an elephant! Nevertheless, none of these

The "X-ray" or "lifeline" Stone Age style of northern Europe was widely diffused to northern Siberia and possibly to North America.



A very similar style appears in central India during the Mesolithic period where it probably developed locally.



pictures even remotely resembles the X-ray convention of northern Europe. The assumption that the lifeline drawings evolved locally is much easier to defend than the proposition that they were diffused from Norway and Siberia by an unknown route over an enormous area in which there is no present knowledge of the existence of rock paintings.

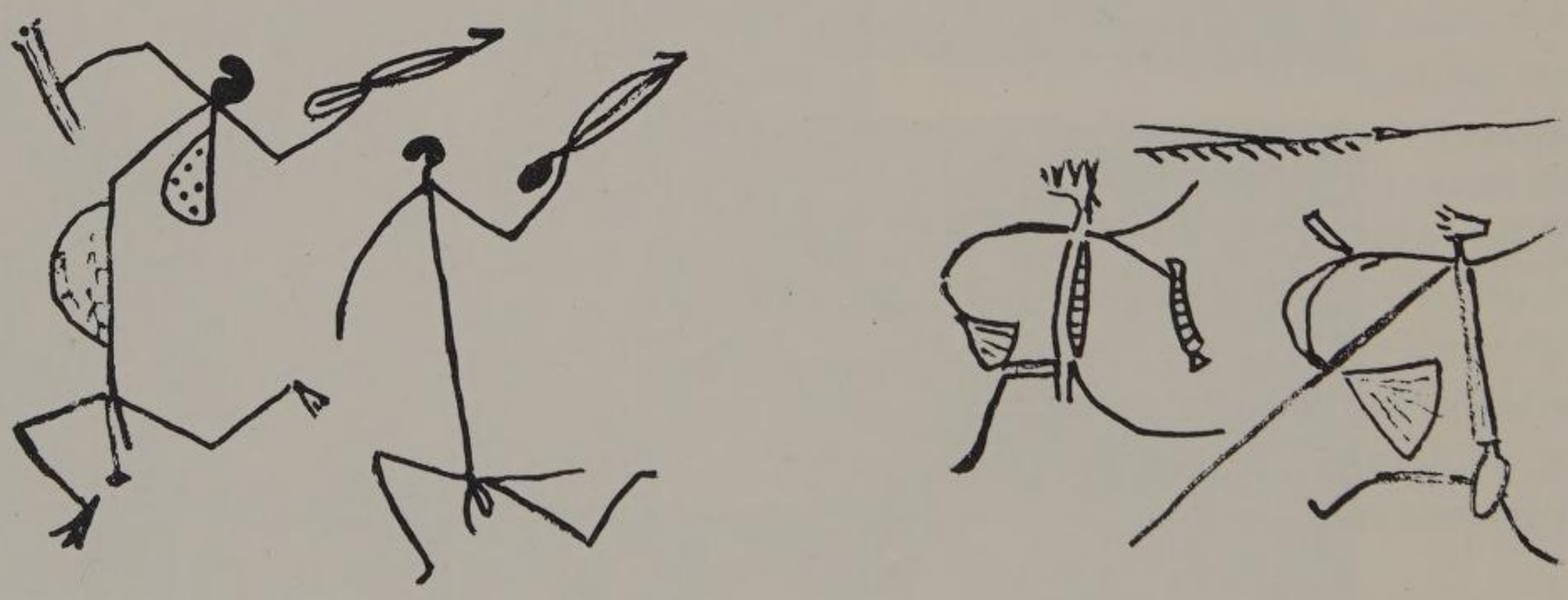
The pictures of bull-leaping may inspire speculation about possible Indo-Cretan relationships.* It should first be emphasized that bull sacrifice and bull-leaping depend upon the presence of at least partially domesticated bulls. There is nothing to indicate that the hunting-and-gathering people of the rock shelters had domesticated cattle during the Mesolithic period in which the style 5 pictures of bull-leaping were probably painted. Nevertheless, the pictures are unmistakably there. The remaining possibility is that the hill people recorded scenes of valley life, including the spectacle of bull leaping, complete with ribbons on the bull's horns and tail. The early domestication of humped cattle in India is attested by the Indus Valley seals of about 2000 B.C.E. This is contemporary with the most expansive period of Cretan culture. Bull worship was widely diffused throughout the Mediterranean basin and Asia Minor. It is possible that it reached the Indus Valley, or that it started there and spread the other way, or (and this seems to us most probable) that it developed independently in both areas. There are still traces of bull-baiting, of which bull-leaping is a refinement, in a few villages of southern India.

With respect to all of the publicized clues to diffusion, Indian rock-shelter painting is a blank. Except for the stark concept of reproducing the external world in paint on rock, which may have been transmitted thousands of miles in thousands of years, it seems probable that rock-shelter painting in India began and evolved there, largely unaffected by other art traditions.

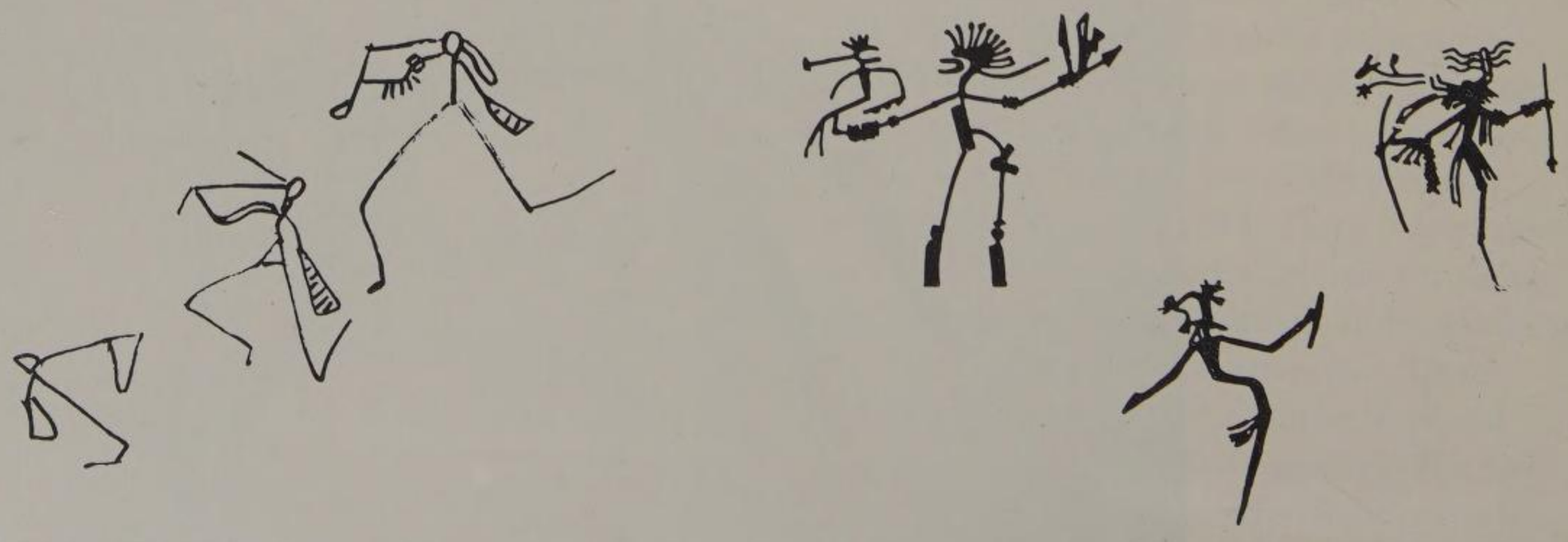
This conclusion may eventually have to be modified, however, by the discovery of the green drawings described on page 31. These apparently very early paintings are quite similar to some of the drawings of predecessors of contemporary Australian aborigines on the Arnhem Plateau.† The similarity may be simply coincidence, but it is striking enough to provide some support for those diffusionists who posit transmission of artistic conventions over greater distances than the two thousand miles between central India and Australia.

*Bull leaping is vividly shown in the Minoan Palace at Knossos. The details of the sport have been best imagined by Mary Renault in *The King Must Die* (New York; Pantheon Books, 1953).

†C. P. Mountford, *Aboriginal Paintings from Australia* (UNESCO, 1964). United Nations, Economic and Social Council, *Aboriginal Paintings from Australia*, prepared by C. P. Mountford, 1962.



Paintings of Mimi ("spirit people") by Australian aborigines of the Arnhem Plateau. Based on a photograph by C. P. Mountford



Drawings in green pigment at Bhimbetka and Raisen Drawing at left based on a photograph by RRRB; drawings at right freehand copies by VSW.

6 Conclusion

Rock-shelter painting in India has been neglected by archeologists and anthropologists. This has come about partly because early mistakes in documenting the antiquity of the paintings discredited the whole field, and partly because the size, beauty, and sophistication of the Magdaleinian paintings of southern France have overshadowed the less impressive paintings elsewhere. It is also because the rock-shelter paintings of central India have been dismissed by some Indian archeologists as the product of comtemporary low-caste villagers.

There is a large field open for further work. Part of this could be in the areas of eastern and southern central India where topographic conditions make probable the discovery of many more painted rock shelters. Additional excavation needs to be made in or near known shelters suitable for precise and painstaking work. Twenty more excavations would provide a more solid correlation between tool types and paintings, fill in the small gaps in the evolution of tools, and make the dating of the paintings more exact. We welcome the entrance of the younger Indian archeologists who are beginning to find the work in this field as rewarding as the more conventional areas of archeology.

In summarizing our own conclusions we emphasize their tentative character:

1. The possibility of a religious motive in the early periods rests upon the evidence of relatively few paintings. Part of the reason for this may be that many of the early paintings have not survived. Even deeply bonded paintings suffer from erosion, patination, blurring, and encrustation. Infrared and ultraviolet photography may disclose many more early paintings. But it must also be remembered that in the early stages of hunting-and-gathering cultures population is very sparse—perhaps no more than one extended family for every hundred square miles. The proportion of food supplied by large animals was small, and they may have been principally objects of awe, fear, and propitiation.

2. With the advent of traps, organized drives of animals over cliffs, and the appearance of the bow and arrow, propitiation may have become less important and magic more credible, because of an increased proportion of successes. With the increase in man's command over nature, food supply and population increased, the number of ceremonial sites expanded, and the utilitarian motive became dominant. Again, the assumption that there was a magic motive at all, rather than one of recording events, rests almost entirely upon the analogy to the recent behavior of primitive societies whose magical ceremonies have been accurately recorded. But at the very least, it is clear that there is a difference between the first four numbered styles and those subsequent to them. The emphasis upon animals and the absence of human hunters suggests a difference between the social motivation of the artists of the early period and those who came later. This distinction is supported by the analogy to the equally sharp difference between the Magdalenian paintings of southern France and the later Mesolithic paintings of eastern Spain and the southern Sahara.

The green drawings of human stick figures in violent action, which we have ascribed to the Upper Paleolithic, present a completely different problem of artistic motivation. If there is any significance to the fact that these drawings resemble the Mimi rock paintings of northern Australia, it is worth noting that contemporary aborigines describe the Australian paintings as being selfportraits of invisible "spirit" people. It is at least possible, therefore, that a form of ancestor or spirit worship in India preceded the ceremonial depiction of animals.

3. The fact that some of the painted shelters are still regarded by local Hindu villagers as sacred or fearsome may provide a clue to earlier attitudes toward them. More important, for the last 1,500 years many shelters have been chosen as locations for shrines or temples of modern cults—as though the *darshan* of the ancients were sought by their distant successors.

4. The association between hunting, dancing, and ceremonial occasions, on the one hand, and the painting of the early pictures, on the other, can safely be stressed. The recurrence of these elements in the pictures is so frequent and widespread that the communal aspects of painting seem well established. The continuation of hunting and dancing ceremonies, such as the Bison Horn dance of the Gonds, among present-day tribals is of interest—even though pictures are no longer painted.

5. The relationship between some shelter paintings and Neolithic/Chalcolithic pottery design may be taken as well established. The stream of influence in this case probably flowed from the hills to the valleys. With the exception of the adoption of pottery and metal arrow-tips by the shelter dwellers, there is no evidence of a counterflow.

6. Indian shelter painting is remarkable because it was so little affected by outside influences and because it persisted so long after other cultures enveloped it. Both of these facts, however, are consistent with all that is known of Indian history and prehistory. India's capacity to accept outside influences, encapsulate them within social barriers, and persist as an aggregate of cells only partially integrated is well recognized.

7. The scant evidence of influences upon shelter painting from outside India include the appearance of "lifeline" drawings at Hospital Hill in Bhopal and in the Mahadeo Hills near Pachmari; the paintings of the fearful sport of bull leaping at Hathi Tol and Narsinghgarh; and the similarities between the green drawings at Bhimbetka and those of the Arnhem Plateau in northern Australia.

The title of this book might well have been *Rock-Shelter Painting in India*. We chose the words *Stone Age*, however, to emphasize the fact that although it is 4,000 years since some areas of India began to use metals, the shelter dwellers persisted until recently in using stone tools and weapons, with none of the implements of progress except pottery and metal tips for their arrows.

Deserted now by the hunting-and-gathering people, the painted shelters are occasionally occupied by hermits, priests, or marginal members of low-caste groups. Some of these have left a spoor of whitewash and soot totally alien to the tradition of the original occupants. The latest of these desecrators of the Stone Age record are the wielders of DDT spray guns who use their antimalaria tool to cover the paintings with graffiti. It is encouraging that by designating Bhimbetka as an international tourist center the government of India has at least made a beginning of protecting these priceless records of the dawn of creative imagination.

Appendixes

I

Regional Distribution of Painted Rock Shelters in India

Region	*No.*	*Name of the Site*	*Number of Shelters*
A. Ahiraura (*about 20 miles south of Banaras*)	1.	Likhunia	3
	2.	Bhaldaria	1
	3.	Lohari	1
	4.	Kohbar	1
	5.	Sugdaria	2
	6.	Andar Sukhdar	1
	7.	Tharpatra	1
	8.	Vijayagarh	2
			12
B. Bhainsur *Near Robertsganj*	9.	Morhana Pahar	7
	10.	Bedia	2
	11.	Lad Bedia	2
	12.	Baga	3
	13.	Baghai Kor	2
	14.	Morchahawa	1
	15.	Khari Patheri	2
	16.	Munni Baba	1
	17.	Lekhania	5
			25
C. Rajpur (*30 miles south of Robertsganj*)	18.	Panchamukhi	6
	19.	Kandakota	2
	20.	Chemanva	1
	21.	Lekhania (Son)	5
			14
D. Banda (*75 miles south of Kanpur*)	22.	Banda	1
	23.	Markadi	1
	24.	Manzawan	1
	25.	Serhat	1
	26.	Malwa	1
	27.	Alma Uldan	1
	28.	Bargal	1
	29.	Karpatia	1
	30.	Chitrakaut	1
			9
E. Pachmari *In the Mahadeo Hills*	31.	Jambu Dwip	2
	32.	Nimbu Bhoja	3
	33.	Dorothy Deep	1
	34.	Montiruzi	1
	35.	Imly Kho	1
	36.	Mahadeo	2
	37.	Apsara Falls	1
	38.	Bori	3
	39.	Others	3
			17

Region	*No.*	*Name of the Site*	*Number of Shelters*
F. Sagar	40.	Bhopal	5
	41.	Naryawala	3
	42.	Abchand	10
			18
G. Bhanpura-Chambal	43.	Aria-Antralia	10
	44.	Chibarnala	2
	45.	Sita Khardi	4
	46.	Kartiria Kund	3
	47.	Indergad	7
	48.	Kanwala	25
	49.	Modi	28
	50.	Sujanpura	17
			96
H. Kota	51.	Darra Kota	3
I. Bhopal	52.	Manwa Bhau	12
	53.	Sivamandir	5
	54.	Hospital Hill	2
	55.	Simla	15
	56.	Dharampuri	3
	57.	Bhadbada	2
	58.	Shahad Karad	7
			46
J. Bhimbetka (*20 miles south of Bhopal*)	59.	Seven areas	480
K. Raisen (*28 miles east of Bhopal*)	60.	Kharvai	68
	61.	Raisen (Hathi Tol)	17
	62.	Ghatpala	2
	63.	Sanchi	2
	64.	Udayagiri	2
	65.	Putlikarar	52
			143
L. Hoshangabad	66.	Vanjari Mata	2
	67.	Adamgarh	17
			19
M. Sivani-Malwa (*30 miles southwest of Hoshangabad*)	68.	Budhu Maj	2
	69.	Bor Rani	2
			4
N. Fatepur-Sikri (*20 miles west of Agra*)	70.	Patsar	5
O. Gwalior-Shivpuri	71.	Gwalior	5
	72.	Tikla	3
			8
P. Narsinghgarh (*60 miles northwest of Bhopal*)	73.	Narsinghgarh	30
	74.	Kotra Bihar	30
			60

Region	*No.*	*Name of the Site*	*Number of Shelters*
Q. Raichur-Karnatak (*Halfway between Hyderabad and Bangalore*)	75.	Kuppagal	1
	76.	Karikal	1
	77.	Vitragal	1
	78.	Hebbal Buzurg	2
	79.	Rupai Gundu	1
	80.	Kuppal	1
	81.	Piklihal	1
	82.	Maski	1
	83.	Bellarayan-Gadda	1
	84.	Benakal	1
	85.	Kallur	1
	86.	Togal Gudda	1
			13
R. Tekkalkota	87.	Tekkalkota	5
S. Kishkindia	88.	Kishkindia	2
T. Badami	89.	Badami	5
	90.	Sitalfadi	10
	91.	Tatkoti	2
	92.	Ramgudiwar	2
			19
U. Kerala	93.	Edakal	1
V. Raigarh	94.	Singanpur	1
	95.	Kabra Pahad	1
			2

Total Regions: 22
Total Locations: 95
Total Shelters: 1001

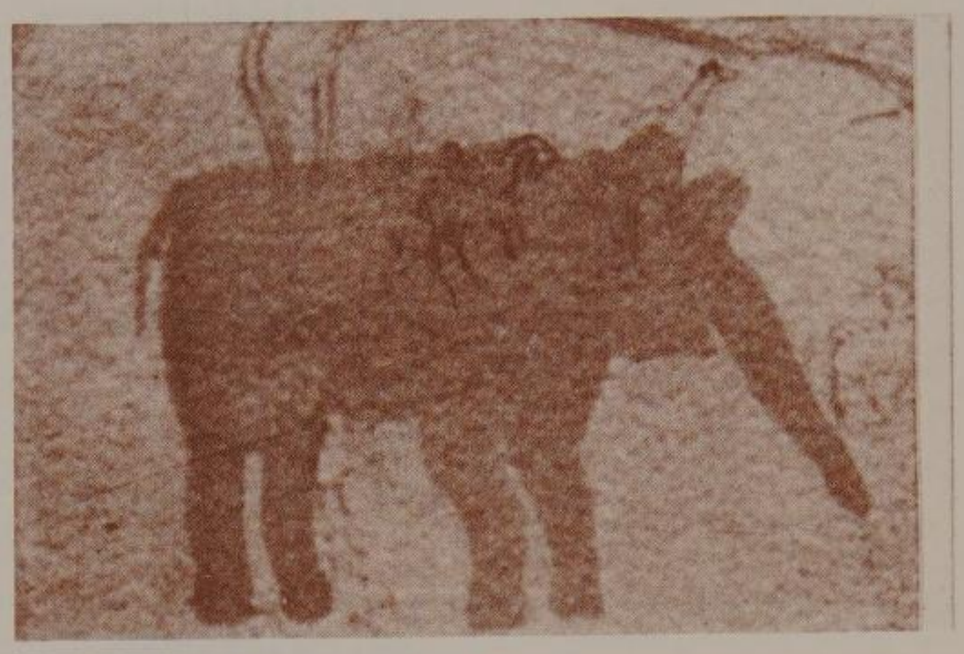
2

Table of Styles

Period I

Mesolithic or earlier

Style 1

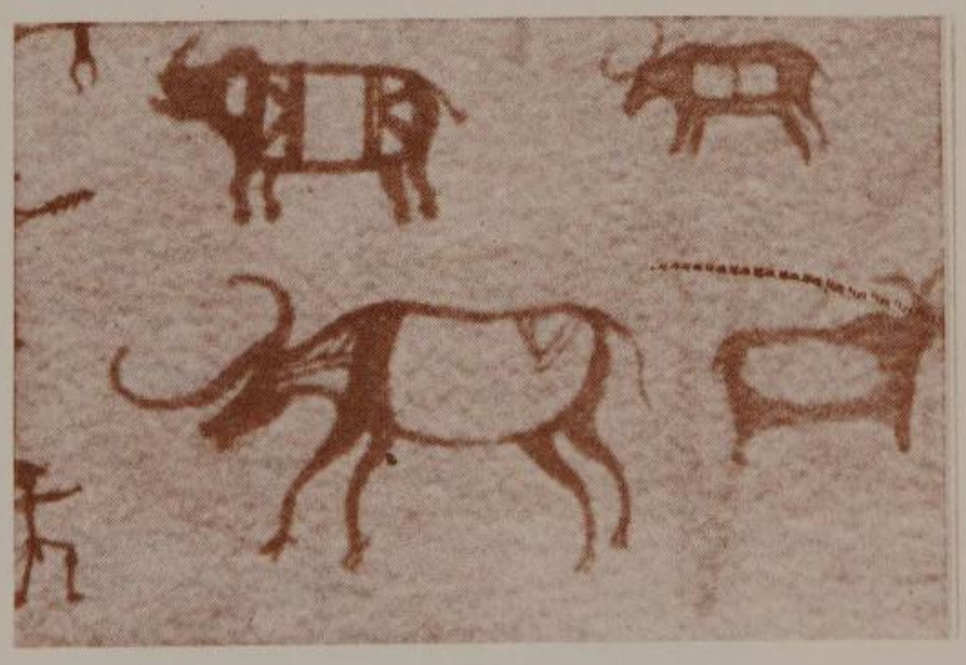


Very faint reddish, or brown, or black wash; no outline; very large: 2–8 feet long; single elephant or bison; no humans; superimposed by style 2; Adamgarh, elephant; Modi, elephant; Abchand, bull; Sanchi, elephant.

Style 2

Very faint red outline; large: 14 in. to 6 feet; no humans; buffaloes and bison; superimposing style 1; Adamgarh, buffalo; Kharvai, bison; Kanwalla, bison.

Style 3



Very faint red wash or very heavy red outline; vacant centers, or filled with wide vertical or oblique lines; associated with human hunters; superimposed by style 4; Ghor, rhino; Simla, bison; Modi, bison; Adamgarh, bison and antelope; Kanwalla, elephant.

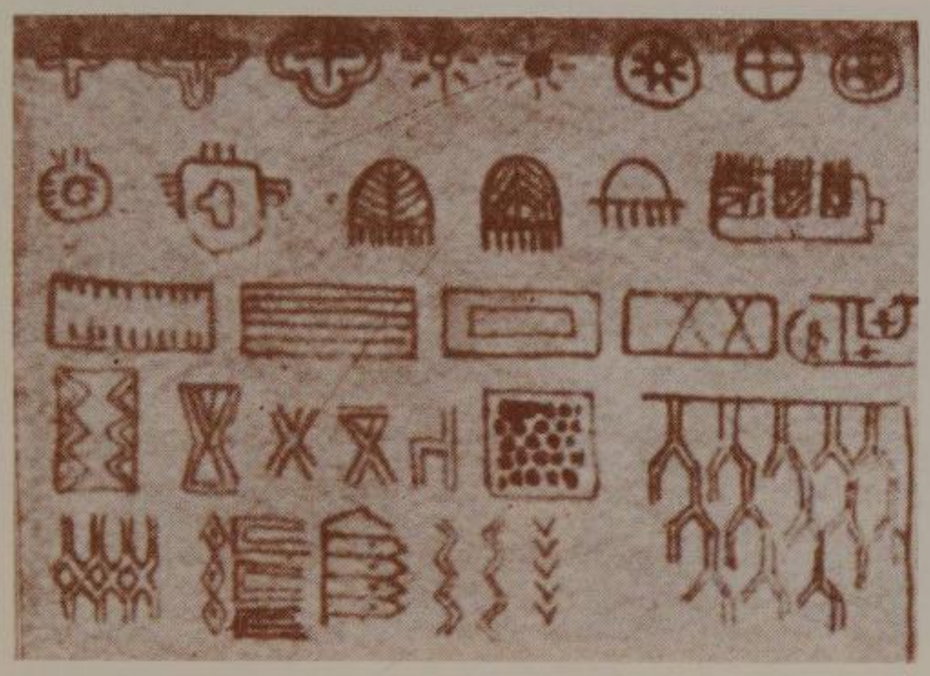
Style 4

Faint red outline with filling following the muscles and viscera; incipient X-ray style; non-geometric; a few human hunters or dancers; superimposed by style 5; Bhopal, Hospital Hill, deer and dancers; Raisen, deer; Kharvai, bison; Ghatpala, bison; Putlikarar, bison, Adamgarh, bison; Kabrapahad, bison; Pachmari, bison.

Style 5

Red or red and white or white outline filled with a great variety of geometric patterns: lines, zigzags, chevrons, triangles, lattices, lozenges, honeycombing, squares, and rectangles; many different animals; somewhat realistic; superimposed by period III paintings; at least 24 locations, but best seen at Hathi Tol, Raisen.

Style 6



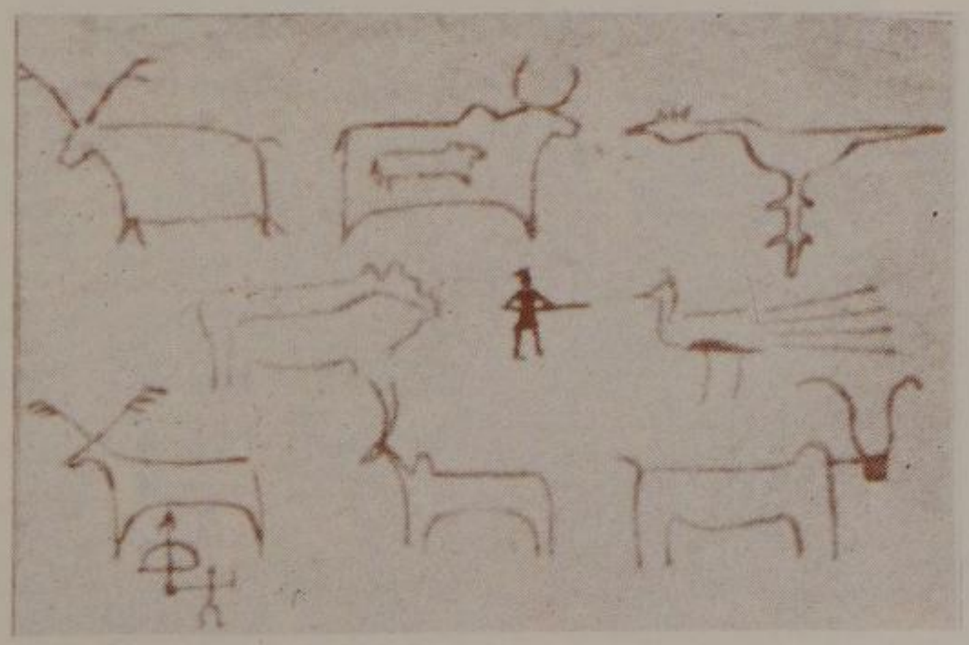
Geometric and floral designs; thin red or purple outline; associated with the animals of Style 3 and the humans of Styles 4 and 5; some patterns like huts; superimposed by Periods III and IV; Bhimbetka, Kabrapahad, Modi, Edakal, Piklihal, Sujanpura, Putlikarad, Shahad Karad, Singanpur, and Tatkoti.

Period II — Neolithic/Chalcolithic and early Iron

Style 7

Red or brown wash with no apparent outline; bison, buffalo, elephant, humped cattle, black buck, monkey, lizard; superimposed by period III paintings; Bhimbetka, Raisen, Modi, Kanwalla, Shahad Karad, Dharampur, Bhaldaria, etc.

Style 8



Simple line drawings in red: antelope, deer, humped cattle, boar, bulls, jackal, pregnant cow, peacock, dancers, archers; superimposed by period III; Raisen, Modi, Sujanpura, Tikla, Kanwalla, Bhimbetka, Badami, Gwalior, Tekkalkota, Fatepur Sikri.

Style 9

Thick white or pale yellow lines as though done with a finger in outline only; many animals crudely drawn, and triangular humans; superimposed by period III paintings; Kharvai, Abchand, Shahad Karad, Putlikarar, Bor Rani, Bhimbetka.

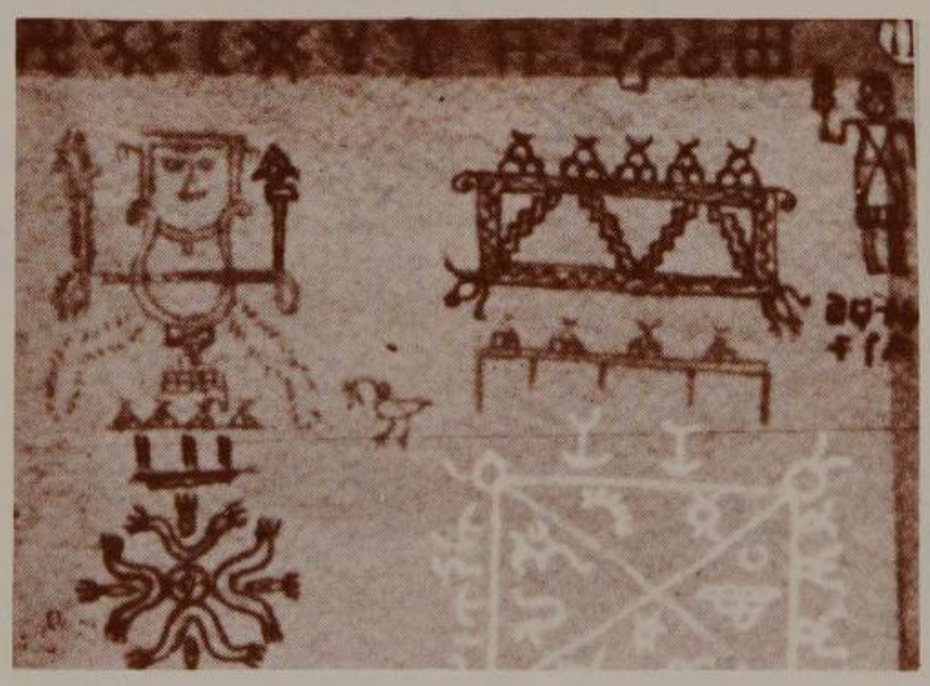
Style 10

White, or yellowish white, or yellow wash without apparent outline; quite realistic and skillfully executed; bulls, tigers, humans; superimposed by period III paintings; Kharvai, Fatepur Sikri, Singanpur, Pachmari, Bhimbetka.

Period III

Early Historic (300 B.C.E.–100 C.E.)

Style 11



Mauryan and Shunga (*300* B.C.E.–*100* C.E.)
Symbols in red or white outline, occasionally green or yellow, or white wash; swastika, hollow cross, elaborate design; associated with Brahmi letters, probably the work of religious recluses from the valley cultures; Bhimbetka, Kharvai, Abchand, Roup, Narsinghgarh, Gwalior.

Style 12

Kushan (*100* C.E.–*300* C.E.)
Red or purple outlines filled with wash or geometrical patterns: horses, donkeys, horse riders, and warriors; similar to pottery designs at Newasa and Navda Todi; found only where Neolithic or Chalcolithic pottery is found; Kharvai, Bhimbetka, Shahad Karad, Adamgarh, Pachmari, Bor Rani.

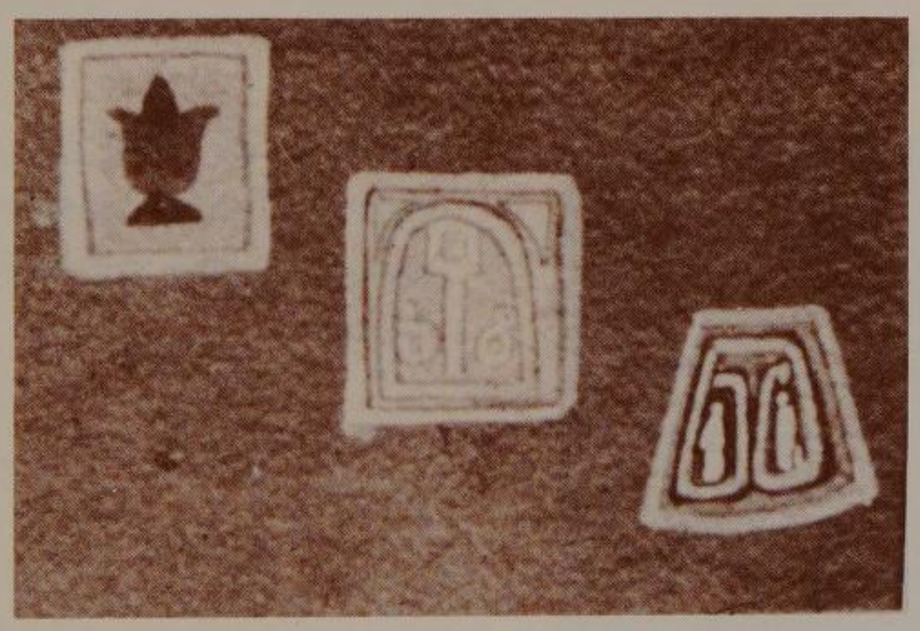
Style 13

Red or white outline or wash; riders of horses or elephants; swordsmen, archers; superimposing all paintings of period II; Adamgarh, Bhimbetka, Shahad Karad, Kharvai, Modi, Abchand, Putlikarar, Raichur, Banda, Tatkoti, Ahiraura.

Style 14

Gupta (*300* C.E.–*500* C.E.)
Red and polychrome decorative patterns; associated with Gupta and Shanka script; found only near Gupta and post-Gupta sites; superimposed by style 17; Kharvai, Bhimbetka, Tikla, Putlikarar.

Style 15



Multicolored decorative patterns: white, red, and yellow wash; Kohbar, Bhaldaria, Sugdaria.

Style 16

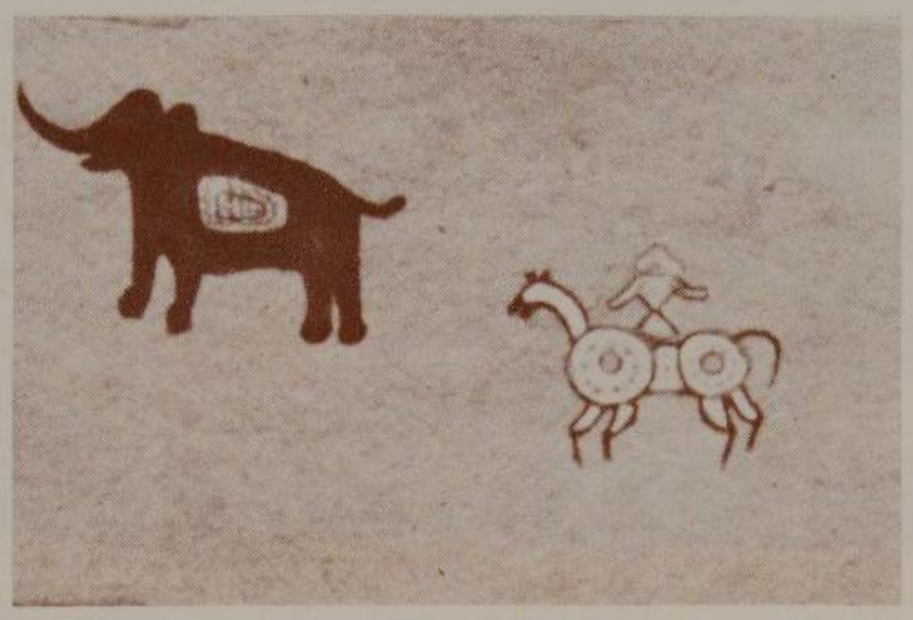
Post-Gupta (*500* C.E.–*800* C.E.)
White, or red, or white and red drawings of domestic scenes, tribal conflicts, carrying, dancing; often realistic and graceful, with emphasis on human action; Pachmari, Bhimbetka.

Period IV — Medieval (800 C.E.–1300 C.E.)

Style 17

Red, white, red and white, orange drawings of wars and processions (cf. 15th century drawings on Hoshang's tomb at Mandu); the style survives in Malwa, Uttar Pradesh, and Bihar; no superimpositions; Kharvai, Putlikarar, Vijayaghar, Lakhajaur, Bhojapur, Pandapur, Bhimbetka.

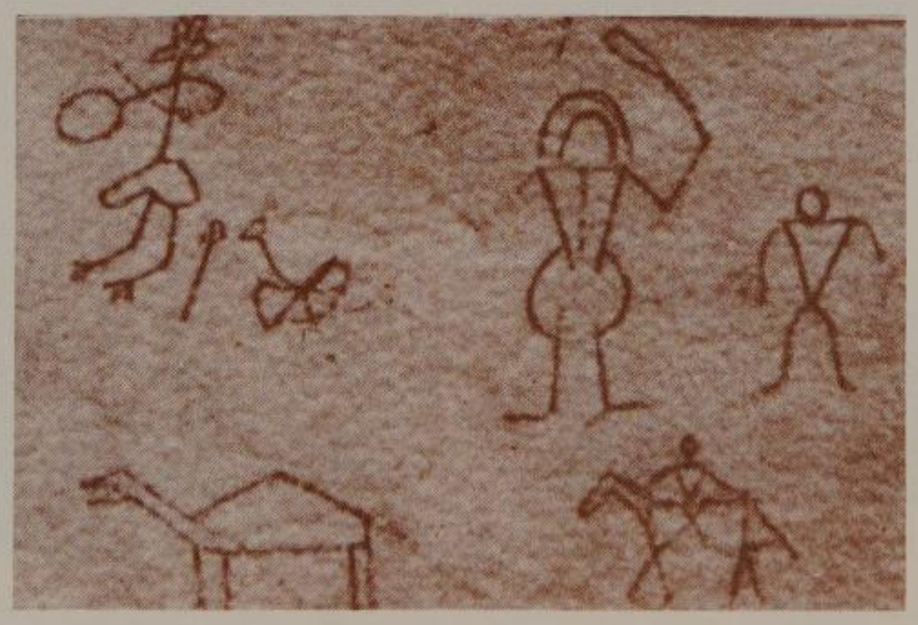
Style 18



Fresh red, or red and white, or orange paintings of elephants, horses and humans; wash with hollow centers; superimposing all period II paintings: Bhimbetka, Kharvai.

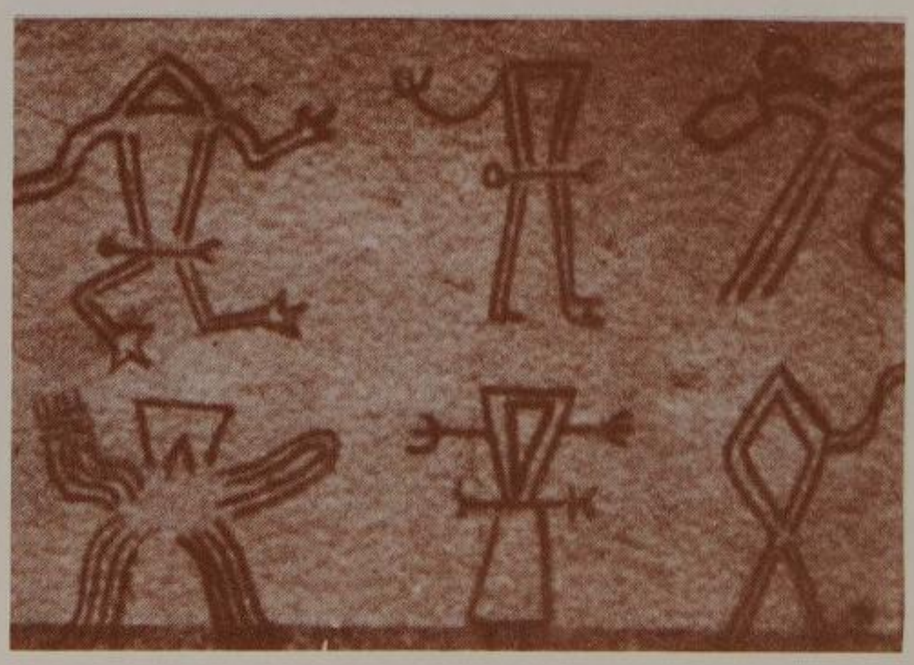
Period V — Recent (1300 C.E. to present)

Style 19



Faint red or black dry crayon (hematite or charcoal lumps) outlines of swordsmen, camels; superimposing period IV; Shahad Karad, Sita, Modi.

Style 20



Red, double line geometrical patterns of human figures; Devanagari script used to write names.

Summary of Locations

Style	*Number of Locations*
1.	4
2.	3
3.	5
4.	5
5.	24
6.	10
7.	6
8.	10
9.	6
10.	4
11.	6
12.	5
13.	10
14.	4
15.	3
16.	2
17.	7
18.	2
19.	3
20.	1

3 Dating the Styles

We present our style charts and dates tentatively and subject to the need for such modification as might be disclosed by a planned survey of the entire region within which rock shelters occur. Detailed color photography of all shelter paintings would be an invaluable supplement to painted copies and written descriptions. If these three forms of evidence should be deposited at a central point, such as Vikram University, which already has a large collection of stone implements from shelter excavations as well as several hundred freehand copies of shelter paintings, they could be studied by scholars without the long lapse of time between visits to shelters and the substantial physical strain required to reach many of them.

At least eighty percent of the evidence upon which our dates and sequence of styles are based is the result of one man's work at irregular intervals over a period of about twenty years. We are conscious of the limitations imposed by this method. Although this classification of styles goes far beyond anything previously attempted, we regard it as an invitation to others to refine or change it. Twenty Ph.D. theses on sites systematically distributed over the region and twenty excavations at well-chosen rock shelters would make a substantial contribution to Indian pre- and protohistory. Our present reservations and comments follow.

Period I. *Mesolithic or earlier*

1. The *sequence* of styles that we have assigned to this period is neatly tied down by superimpositions. There is ample room, however, for additional work, since many more paintings are likely to be found as soon as observers are trained to detect the faint traces of their outlines or washes. The size of the paintings is sometimes so great, the encrustation so severe, and the superimpositions are often so numerous that they may be discerned only after repeated visits by trained observers.

2. It is the beginning date of the Mesolithic paintings that arouses controversy, often quite embittered. In sharp contrast to the conclusions of D. H. Gordon, but more nearly in line with the suggestions of B. and R. Allchin, we place the beginning of shelter painting early in the Mesolithic. The evidence for this has been cited in the text.

3. There is a distinct possibility that this may turn out to be too conservative. Styles 1–4 and the drawings in green pigment may be Upper Paleolithic.

4. We assign the aggregate of abstract symbols that we have called style 6 to period I because these symbols are always found associated with the animals of style 3 and the humans of styles 4 and 5.

Period II. *Neolithic/Chalcolithic, early Iron*

In period II problems of both absolute and relative dating occur. The end of the period is securely anchored in historic fact, and all of the styles of period II are superimposed by paintings of period III. But this is not of much help in fixing the *beginning* of period II.

1. For this we are largely dependent upon parallels between rock-shelter painting and datable decorated pottery. There are striking similarities between styles 5 and 7 shelter paintings and early Chalcolithic pottery. We assume that the paintings occurred before the more conventionalized pottery decoration because the wild animals shown in the shelter pictures were closer to the lives of the shelter dwellers than to the pottery makers.
2. With respect to the relative dates of styles 7, 8, 9, and 10 within period II, the sequence is arbitrary. These styles could be listed in any order. There are no known superimpositions within the period; no guides from subject matter; and no inferences from style.

Periods III, IV, and V. *Early historic, medieval, and recent*

1. The absolute dating of the styles within these three periods is relatively certain because much of the subject matter can be associated with historical facts. To some extent this evidence is supported by superimpositions.
2. Three of the ten styles in these three periods (11, 14, and 15) are of symbols, patterns, and inscriptions which are probably intrusions from nearby Hindu or Buddhist sites.
3. One style (16) does, however, contain a mass of detail about the lives of hunting and gathering people. Though it is relatively late (post-Gupta), this is not surprising, since the style is principally represented in the Mahadeo Hills near Pachmari, which until the past century was one of the most inaccessible parts of India.
4. Four styles (12, 13, 17, and 18) contain subject matter almost certainly extraneous to the lives of the shelter dwellers.
5. Two recent styles (19 and 20) are so conventionalized and rare that they convey little significance.

4 Excavations in Painted Rock Shelters

G. R. Hunter at Dorothy Deep and Jambu Dwip, Pachmari, 1936, 1955

1. At Dorothy Deep Hunter concluded that the shelter was first occupied by Mesolithic tool-users and later by pottery users. There were no Paleolithic predecessors and no Neolithic polished tools.

2. At Jambu Dwip there were no Paleolithic tools. In an upper layer containing only microliths Hunter found a human skeleton. The layer above this produced pottery shards.

A. Gosh, Baniya Beri, Pachmari, 1950

3. In a trench 22″ × 39″ Ghosh found four layers. The lowest, consisted of weathered sandstone and yielded no finds. Layer 3, of yellow soil mixed with stone chips, gave geometric microliths of a prepottery period. Layer 2, of similar soil, also yielded geometric microliths. The top layer was of dark brown earth and contained no tools. Evidently the shelter was inhabited only during the Mesolithic Period.

4. Trial pits at Apsar Vihar Bazar and Nimbu Bhoj shelters showed no regular stratigraphy, but yielded a few microliths.

V. S. Wakankar and H. V. Trivedi, Modi, 1959

5. This excavation in a painted rock shelter at Modi in the Chambal Valley showed ten undisturbed layers above bedrock. In the bottom, or 10th layer there were middle and late Stone Age scrapers, points, burins, retouched flakes, triangles, and one trapeze. In layer 9 there were geometric microliths: 45 parallel-sided blades, 34 triangles, 6 lunates, and 3 trapezes.

In layer 8 there was one anvil stone and a small heap of haematite grains. The color of the haematite matched that of a painted stone near it and also the color of the earlier of two superimposed paintings of a bovid and round-headed archers on the wall of the shelter.

In layers 7, 6, and 5 there were additional microliths, a nondatable fireplace, but no pottery. Layer 4 was a sterile band of sticky black soil deposited by wind and water showing a very long period without occupation. Layers 3, 2, and 1 produced pottery shards of the 11th and 12th centuries A.D. and a few unfinished beads.

Allahabad University, Lekhania, 1961–63

6. At Lekhania shelter near Ahiraura, an Allahabad University team found Mesolithic tools throughout several feet of occupational debris. The tools became smaller, finer, and more varied in the sequence from lower to higher levels. Pottery appeared with increasing frequency near the top. Several skeletons buried in the accumulated debris were carbon-14 dated at c. 1700 B.C.

R. V. Joshi, Adamgarh, 1964

7. In one trench with several undisturbed layers, lower Paleolithic tools appeared at the lowest tool-bearing level, including Acheulian and post-Acheulian tools in transition to middle Paleolithic handaxes, chopping tools, and cleavers. Above this were fewer handaxes and chopping tools, but more cleavers; then a sharp change to flake tools including scrapers and points; and nearer the surface, a very large assembly of microliths.

8. In another trench, Joshi found black soils 20 to 60 inches deep, without layers. There were microliths throughout. Points and blades were the principal tools, followed by lunates, triangles, and scrapers. At depths of 10 to 18 inches were found the bones of dogs, humped cattle, water buffalo, goats, domestic sheep, pigs, sambar, barasinga, spotted deer, hare, porcupine, and monitor lizard.

A haematite nodule was found 22 inches below the surface. Material taken from above the nodule was carbon dated at 5,500 B.C.E.

V. S. Wakankar and S. K. Pande, Kharvai and Shahad Karad, 1967

9. Both of these locations are near Bhopal. In a trial trench at Kharvai the bottom layers produced microliths, pieces of a human skull, and no pottery. The middle layer gave Chalcolithic pottery and microliths; the top layer, early historic pottery, iron, and microliths.

10. The trial trench at Shahad Karad produced results very similar to those at Kharvai.

V. S. Wakankar and S. K. Pande, Archer's Cave, Bhimbetka, 1967

11. The trial pit was 39″ × 39″ in a shelter near the western edge of Bhimbetka Mountain. Four layers were evident, tilting downward toward the back of the shelter. Layer 4, at the bottom, produced one polished stone and 13 microliths. Layer 3, next above, yielded microliths, pottery shards, and indications of a fireplace. There were 5 burnt stones, 279 chips, 107 parallel-sided flakes, 14 triangles, 10 points, 4 lunates, 2 trapezes, 1 blade, and 43 pottery shards. The pottery had a fish-scale design similar to that of Harappa and the fabric was like that of Kayatha ware.

Layer 2 was separated from those below by stone slabs, which might have fallen from the roof, but might have been brought in by man. Layer 2 produced 14 pieces of chalcedony brought in for making microliths, 86 waste flakes, 54 parallel-sided flakes, 14 retouched flakes, 2 fluted cores, and 55 shards of Chalcolithic pottery. Layer 1, at the top, showed both microliths and pottery of the medieval period.

S. K. Pande, Jambu Dwip and Baniya Bwri, Pachmari, 1968

12. In the Jambu Dwip dig the deposit above bedrock was only 6 inches deep. It yielded small numbers of both microliths and pottery shards.

13. In the Banya Beri excavation there were two distinct layers. The lower one, of loose sandy soil, gave one large chalcedony piece, 2 jasper flakes, 2 triangles, and 28 chips. The upper layer, of brown earth, produced 1 fluted core, 4 parallel-sided flakes, 1 triangle, 1 lunate, 1 trapeze, 2 points, and 21 waste flakes. There was no pottery.

V. S. Wakankar, Auditorium Rock, Bhimbetka, 1969 (Shelter III-7-14)

14. In a 2′ × 2′ trial pit the lowest layer produced Clactonian and early Acheulian tools. The middle layers gave middle Paleolithic tools of quartzite sandstone; and the top layer, Mesolithic tools of fine-grained quartzite.

Sagar University, Bhimbetka, 1971 (Shelter III-7-14)

15. A trial trench, about 6′ × 8′ in Auditorium Rock yielded the same results as were found by Wakankar in no. 14 above.

16. In another dig at Bhimbetka in shelter III-F-13 in December 1971, a human skeleton was found—the first to be found in a painted shelter in the Bhopal area. The surface was covered by ashy brown soil 6″ deep yielding microliths and Chalcolithic pottery. The skull was covered by two bowls, blotchy black and red. The skeleton has not yet been dated.

V. S. Wakankar and associates: K. D. Gill, Narayan Vyas, Dr. S. K. Arya, Bhimbetka, 1971–75

Bhimbetka Mountain consists of three deeply eroded sandstone-surfaced ridges separated by narrow valleys. The area is only two miles from a main highway, but it is still wild enough so that in February, 1972 a tiger killed a sambar near where four Gond woodcutters were working near the excavators.

17. Soil profile trench in a valley between the first and second ridge.

Layer 1: Recent black soil
Layer 2: Black fossil soil
Layer 3: Gray sandy silt with carbonized wood, carbon-14 date pending
Layer 4: Red sand silt containing Upper Paleolithic tools
Layer 5: Kankary yellow silt
Layer 6: Loose laterite with Acheulian tools
Layer 7: Compact laterite
Layer 8: *In situ* laterization of bedrock
Layer 9: Bedrock

18. Shelter IV-F-14 (Auditorium Rock)-Trench 1
Produced the same results as no. 14, above.

19. Shelter IV-F-14(Auditorium Rock)-Trench 2

Layer 1: Late historic
Layer 2: Mixed Mesolithic microliths and Middle Paleolithic tools
Layer 3: Acheulian cleavers and flakes in highly cemented boulder conglomerate

20. Shelter II-B33 (Painted rock shelter)-Trench 3
Layer 1: Early historic, flat stone pavement set in clay brought from outside
Layer 2: Chalcolithic: pottery, microliths, copper ornaments, mace head, *red-pigment color stones*, pavement floor
Layer 3: Mesolithic: geometrical microliths
Layer 4: Upper Paleolithic: no geometrical tools
Layer 5: Bedrock

21. Shelter III-F-24-trench 1
Layer 1: Early Historic: Pottery, glass bangles
Layer 2: Mesolithic: microliths, no pottery
Layer 3: Middle Paleolithic tools in breccia
Bottom not reached; work continues.

22. Shelter III-F-24-trench 2
Layer 1: Mauryan pottery, copper and silver punch-marked coins
Layer 2: Chalcolithic pottery and microliths
Layer 3: Mesolithic: microliths and no pottery
Layer 4: Middle Paleolithic working floor, tools on sandstone
Layer 5: Acheulian II scrapers, cleavers, hand axes; cleavers dominant
Layer 6: Acheulian I scrapers, cleavers; hand axes dominant
Layer 7: Gap of 60 cms, without tools
Layer 8: Pebble Tools on local flat stones
Layer 9: *In situ* laterite (primary)
Layer 10: Bedrock

23. Shelter III-F-14-trench 4a
Layer 1: Early historic: partial human burial with an earthen pot on the right side, carbon-14 dated 2045 ±110 B.P.
Layer 2: Mesolithic: microliths
Layer 3: Bedrock

24. Shelter III-F-14-trench 4b
Layer 1: Partial human burial (torso only)
Layer 2: Mesolithic: microliths; layer carbon-14 dated 5855 ±110 B.P.
Layer 3: Bedrock

25. Shelter III-A-30-trench 6
Layer 1: Late medieval: late Muslim coins
Layer 2: Chalcolithic: pottery, microliths, copper objects, mace heads, *colored pigment stones*
Layer 3: Mesolithic: microliths, nongeometric tools, no pottery, *colored pigment stones*
Layer 4: Acheulian alignment of rocks and stones parallel to the rear wall of the shelter; about 80 Acheulian tools found between the wall and the rear of the shelter.
Layer 5: Bedrock

26. Shelter II-A-28-trench 7
Layer 1: Medieval iron shield and iron arrow-heads, pottery
Layer 2: Early historic pottery, iron arrow-heads, glass beads, stone beads, *colored pigment stones*
Layer 3: Chalcolithic: painted Malwa pottery, microliths, steatite beads, copper objects, *colored pigment stones*
Layer 4: Mesolithic: microliths, mace heads, child burial with bone pendant, *colored pigment stones*
Layer 5: Upper Paleolithic: nongeometric microliths, human burial, *green colored pigment stones* (terra verta)
Layer 6: Middle Paleolithic tools
Layer 7: Bedrock

27. Shelter III-A-29-trench 8
Layer 1: Medieval smith site, silver ornament Ganesh image, glass beads, stone beads, crucibles for melting metals
Layer 2: Chalcolithic: pottery, microliths
Layer 3: Acheulian: cleavers, scrapers, and hand axes in lateritic deposit
Layer 4: Pebble tools made from river stones embedded in compact lateritic deposit
Layer 5: Bedrock

28. Dr. V. N. Misra, Bhimbetka Shelter III-F-23
Layer 1: Recent
Layer 2: Mesolithic: microliths
Layer 3: Upper Paleolithic complex of tools on sandstone
Layer 4: Middle Paleolithic tools
Layer 5: Two working floors of Acheulian period
Layer 6: Bedrock

The presence of microliths in every one of the 28 excavations in painted shelters; the finding of hematite, yellow ochre, and manganese pigment stones in Mesolithic layers; and the discovery of green pigment in an Upper Paleolithic layer provide impressive support for our conclusion that rock painting began in the Mesolithic or earlier.

5 Other Studies of Indian Rock-Shelter Paintings

Credit for the modern discovery of rock-shelter paintings in India should probably be given to Archibald Carlleyle and John Cockburn, who first reported them in an archeological context in 1880. Their discoveries in the northern edge of the Kaimur Range near Mirzapur, Banda, and Rewa were reported very soon after the announcement of the cave paintings at Altamira, Spain. Partly as a result of this coincidence, extravagant claims were made for the antiquity of the Indian paintings. These claims were soon attacked and the subject fell into disinterest or even disrepute among archeologists in India.

Nevertheless, a few energetic investigators continued to push into the hills in search of new sites. In 1882, C. Maxwell reported red-painted inscriptions at Dada Hill near Chargul. Soon after this A. M. Markham found cave paintings at Chacua Kunda near Rewa. In 1892, F. Fawcett produced the first reports of rock paintings in the South—near Bellary—and in 1901 he described rock engravings at Edakal.

The next findings were again in the North, at Banda. C. A. Silberarrd in 1907 published descriptions of paintings at Serhat, Malwa, Kuriya Kunda, Karpatia, Amwa Uldan, and Bargad. Four years later, D. L. Drek of the Archeological Survey of India published brief notes of his findings in the Son Valley. And in 1918, C. W. Anderson reported significant discoveries at Singanpur, well to the east of any previous sites.

The good repute of the subject was again marred, however, when by mistake P. Mitra published in *Prehistoric India*, along with Anderson's Singanpur drawings, a copy of a rock painting at Cogul, Spain and a copy of an Altamira painting. The first competent survey of the field did not appear until 1932. Written by Manorangan Ghosh, it placed special emphasis upon the discoveries at Singanpur and Adamgarh.

In 1939, M. E. and D. H. Gordon became interested in the subject, and their interest was sustained for twenty years. They brought to the subject modern techniques, including excavation and classification of styles. After several monographs, their final results appeared in a chapter of D. H. Gordon's *The Prehistoric Background of Indian Culture,* published in Bombay. The Gordons' work was largely centered in Pachmari where the most conspicuous paintings are relatively recent. His references to Adamgarh were made before R. V. Joshi's excavations produced a carbon–14 date of 5500 B.C.E. His conclusion that none of the paintings could be dated before 1000 B.C.E. is, therefore, in our view much too conservative.

Gordon, however, regarded the study of rock paintings, especially when accompanied by excavation, as an important aspect of archeology. He deplored the persistent disinterest of both Indian and Western archeologists in this branch of Indian studies. Unhappily and ironically, however, his conclusion that the dates of the paintings fall within the boundaries of protohistory diminished interest in them. The only published reference to his work in western literature dismisses the Indian rock paintings as being "recent."

A welcome step toward correcting this state of affairs was taken in 1968, when Bridget and Raymond Allchin published in England their *Birth of Indian Civilization*. Chapter 12 of this book reflects recent excavations, the advent of carbon-14 dating, and "several useful articles" by one of the authors of this book, V. S. Wakankar. Although their conclusions are carefully tentative, they associate the beginning of rock-shelter painting with the "Late Stone Age," that is, the period we have been calling Mesolithic.

Between 1952 and 1974, Wakankar surveyed approximately a thousand painted rock shelters—more than five times as many as had been reported before. With the help of his students in Bharati Kala Bhavan, Ujjain, Sachidananda Negdeve, Muzaffarudin Quarashi, and Abdul Rahim Gutiwalla, he copied hundreds of paintings in the rock shelters of the Chambal Valley before they were covered by the Ghandisagar Reservoir. With the help of S. K. Pande and Chacha Mukerjee he discovered additional sites in the Sagar, Bhopal, Pachmari, and Bor Rani areas. In 1958 he found the spectacular display of paintings at Bhimbetka, which has recently been acclaimed in the world

press as "the golden treasury of prehistoric Indian art." He also undertook several excavations at Modi, Kharvai, Bhimbetka, and Kayatha. The results of these excavations strengthened the association of the beginning of shelter painting with the Mesolithic or earlier, and its rapid spread at the beginning of the Neolithic/Chalcolithic periods.

Wakankar developed a tentative system of classification of the paintings, which was offered at the Annamalai session of the Oriental Congress. This was expanded in 1961 in Dharmayug, and presented in August, 1962, to the Rome, Italy, meeting of the International Congress of Pre- and Protohistory, where he also set up an exposition of his freehand copies of Indian rock shelter paintings. In expanded form this exhibit was repeated at the Musée de L'Homme in Paris in January, 1963, and in Frankfurt, Germany, at the Frobenius Institute, arousing some interest among European scholars, but no actual scholarly effort.

Our collaboration began in 1963 and resulted, among other pleasant things, in the first publication of an article illustrated with color photographs. Since then, we have both been able to publish a number of short pieces with illustrations in periodicals on both sides of the world. And a recent flare of publicity about Bhimbetka has begun to introduce the subject of Indian early rock paintings to a popular audience.

More important, this interesting area of Indian studies is beginning gradually to take hold in a few Indian universities. Several graduate students have done or are doing regional studies; notably R. K. Varma of Allahabad University, in the Mirzapur area. Sagar University, with assistance from the University Grants Commission, has recently undertaken a survey, accompanied by trial trench excavations, of the painted shelters in the Sagar–Bhopal area.

The field of rock engravings and rock "bruisings," which we have barely mentioned, is open for work. The engravings, of which there are a very few specimens in the sandstone area, may turn out to be earlier than the paintings, if an analogy to ancient European art can be made for India. The bruisings are principally in the granite areas further south in the peninsula, and may very well be later.

6 Reconstructing the Rock Paintings

1. Most of the rock shelter paintings in Europe, Asia, Africa, and North America can be photographed by natural light at *f*/16 with exposures of ¼ to 2 seconds. For this purpose a single-lens reflex camera, a tripod, and a bulb or time/shutter control are indispensible. The *f*/16 opening is necessary to provide enough depth of focus to compensate for the irregularities of the rock surface. The line of sight of the camera must be at right angles to the painted surface; and the focus must be adjusted until the granular structure of the rock is well defined in the viewer.
2. Project the photograph slide of the painting in a dark room onto a 12″ × 18″ piece of art paper; with a faint pencil line, trace on the paper the outline of all of the painted areas discernable in the projected image. Long study of faintly pigmented areas is often necessary. Care must be taken not to imagine lines that are not there, but a limited amount of interpolation is permissible when a blank space in a painted line is clearly the result of flaking away or encrustation of the rock surface.
3. Using acrylic watercolor pigments, fill in the areas bounded by the penciled tracings on the paper, matching the watercolors to the original color of the rock paintings as closely as the eye can judge.
4. Again project the photograph of the rock painting onto the art paper now containing the watercolor copy, exactly fitting the projected image of the original rock painting to the watercolor copy.
5. Using tungsten film, rephotograph the combination of the watercolor copy and the projected image of the original photograph. All of the texture of the painted rock surface, the surrounding rock, and any superimpositions there may be on the original rock painting are thus imposed on the watercolor copy. Time exposures ranging from 1 to 15 seconds are necessary in photographing the projected image. Zoom lenses on both the projector and the camera are a great help in matching the projected image to the watercolor copy, and the camera field to the combined images. The problem of parallax can be avoided by placing the camera lens directly above the projector lens, and by making the camera's field of vision slightly smaller than the outside dimensions of the projected image of the slide. Care must be taken, however, not to place the camera lens in such a way that upward glare from the projector intrudes upon the camera's line of sight. Bulb control of the camera is necessary since even minute jarring of either the camera or the projector will ruin the results.
6. If the rock painting is done with white or pale yellow pigment and is therefore lighter than the surrounding rock surface, the technique must be reversed—i.e., the pencil-traced area of the rock painting must be left blank, and the unpainted area of the surrounding rock watercolored a darker shade of the rock color. This increases the contrast between the light colored pigment and the rock. By using long exposures when rephotographing, the darkened areas of the rock surface can be brought to their original color and texture.

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Bull-leaping
Style 5
Narsinghgarh
Late Mesolithic
About 10 in.
Restored
This painting presents a moving picture of the sport. The boy leaps for the running bull's horns, somersaults onto its back, and somersaults again to the ground. A small dog, jumping through the bull's horns, complicates matters.

Leaping doe
Style 7
Bhimbetka
Neolithic/Chalcolithic
10 in.
Restored
Style 7 is widely represented in seven locations by many animals and human hunters painted in red or brown wash without outline.

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